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MATERNITY SERVICES IN THE DEVELOPING WORLD- WHAT THE COMMUNITY NEEDS

Proceedings of the Seventh Study Group of the Royal College of Obstetricians and Gynaecologists
September 1979

Edited by:

Professor R. Hugh Philpott

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MATERNITY SERVICES IN THE DEVELOPING WORLD - WHAT THE COMMUNITY NEEDS

Proceedings of the Seventh Study Group
of the
Royal College of Obstetricians and Gynaecologists

9th, 10th and 11th September, 1979

The Royal College of Obstetricians and Gynaecologists gratefully acknowledges the sponsorship of the Study Group by the Ministry of Overseas Development, London.

The discussion that followed each paper is included. As it was not possible to refer all the material back to the authors or discussants, it is hoped that the proceedings have been reported fairly and accurately.

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The subject of the Seventh Study Group is particularly appropriate in the Golden Jubilee Year of the Royal College of Obstetricians and Gynaecologists.

The history of our College is one of continued interest and communications with many countries in the developing world who are part of the Commonwealth. Almost all of the countries are now independent and developing separate professional bodies, but the links with the College in London remain. Our Meeting from which this book is the product, is an example of one of those links. The knowledge of the needs of the developing world in maternal and child care and the facilities of the College have brought together a wide variety of specialists in the subject.

I am grateful to all the people who helped to bring this meeting about. To my colleagues Dr. G. Ebrahim, Dr. P.M. Dunn and Professor Sir John Dewhurst, whose contacts throughout the world ensured the representation of many developing countries that have made important contributions to maternity care. To Dr. A.M. Baker and the Ministry of Overseas Development whose generous support enabled many key speakers to be brought to the meeting. To my Secretary, Mrs. Beryl J. Brocklebank, and her assistant Mrs A. Nocerino, who have, with infinite care, collected and produced this book. To Mrs J. Fagelston for recording and transcribing the discussion periods. And finally, to all speakers and chairmen who made the meeting such a memorable success.

R.W. Beard
Convener of Scientific Meetings

London,
June 1980

Back row, left to right - Dr. Dissanayake; Dr. Bullough; Dr. Berkeley; Sir John Dewhurst; Professor Scott; Dr. Barns; Professor Philpott; Professor Bwibo; Mr. Lawson; Dr. Armar; Professor Hendrickse; Professor Fairweather; Dr. Naeye; Professor Trussell; Dr. Stott; Dr. Scotney; Dr. Gebbie.

Front row seated, left to right - Dr. Belmont Williams; Miss Kwast; Professor Harrison; Professor Galba Araujo; Professor Caldeyro-Barcia; Dr. Dunn; Dr. Ebrahim; Professor Beard; Mrs. Grewal; Mr. Alment; Dr. Menon; Dr. Edström; Professor Pinkerton; Dr. Baker; Dr. Shah; Miss Everett; Dr. Ross; Dr. El Hakim; Professor Ratnam; Professor Mokgokong.

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PROGRAMME OF STUDY GROUP

Sunday, 9th September 1979

9.00 a.m. Introduction and Welcome by the President

SESSION I - Maternal and Perinatal Epidemiology

Chairman: Professor R.W. Beard, U.K.

9.15 a.m. Epidemiological factors influencing maternal mortality
Dr. J.S. Berkeley, U.K.

9.40 a.m. The role of the Pathologist
Dr. R. Naeye, U.S.A.

10.05 a.m. Cuban perinatal survey
Dr. S. Rodés, Cuba (in abstentia)

10.30 a.m. Discussion (Discussion Opener - Dr. Gebbie, New Guinea)

11.00 a.m. Coffee

Aproaches to Reducing Maternal and Perinatal Mortality

Chairman: Professor R. Trussell, U.K.

11.20 a.m. Africa
Professor K. Harrison, Nigeria

11.50 a.m. Latin America
Professor Caldeyro-Barcia, Uruguay

12.20 p.m. Discussion

12.50 p.m. Lunch

SESSION II - Provision of Maternity Services

Chairman: Dr. Belmont Williams, Sierra Leone

2.00 p.m. Field research in the delivery of health care
Dr. T. Barns, India

2.30 p.m. Management of obstetric emergencies in a rural area
Professor K. Menon, India

3.00 p.m. Discussion (Discussion Opener - Miss J. Everett, U.K.)

3.40 p.m. Tea

Chairman: Mr. J. Lawson, U.K.

4.00 p.m. Organisation of services in Africa
Professor H. Philpott, S. Africa

4.20 p.m. Organisation of services in Cuba
Professor Alvarez-Lajonchere, Cuba (unable to attend)

4.40 p.m. Organisation of services in India
Dr. K. Shah, India

5.00 p.m. Discussion

Monday, 10th September 1979

SESSION III - The Newborn

Chairman: Dr. P.M. Dunn, U.K.

9.00 a.m.	Infant feeding Professor R. Hendrickse, U.K.
9.20 a.m.	Provision of neonatal care in Kenya Professor N. Bwibo, Kenya
9.40 a.m.	Factors influencing neonatal care in Latin America Dr. C. Serrano, Brazil (unable to attend)
10.00 a.m.	Discussion (Discussion Opener - Dr. M. Chan, U.K.)
10.40 a.m.	Coffee

SESSION IV - Family Planning

Chairman: Professor S.S. Ratnam, Singapore

11.00 a.m.	Factors influencing acceptance of family planning in Ghana Dr. A. Armar, Ghana
11.20 a.m.	Provision of family planning services in India Mrs. S. Grewal, India
11.40 a.m.	Provision of family planning services in Malaysia Dr. N.L. Aziz, Malaysia
12.00 noon	Discussion (Discussion Opener - Professor K. Menon, India)
12.50 p.m.	Lunch

Discussion Groups

2.00 p.m.

Chairman: Dr. G. Ebrahim, U.K.
Influence of Maternal Nutrition on Pregnancy Outcome

Chairman: Dr. P.M. Dunn, U.K.
Low Birthweight - Infection, feeding and mortality

Chairman: Professor H. Philpott, S. Africa
Training Programmes for Students, Doctors and others in Community Obstetrics

Each Chairman was asked to summarise the conclusions of his group in 1,500 to 2,000 words

Tuesday, 11th September 1979

SESSION V - Provision of Midwifery Care

Chairman: Professor D. Fairweather, U.K.

9.00 a.m.	The role of the midwife and her training for rural obstetrics Miss B. Kwast, Nigeria
9.20 a.m.	In-service training for midwives Dr. S. Ross, S. Africa
9.40 a.m.	Collaboration between obstetrician and MCH Aides in Tanzania Dr. R.L. Evans, Tanzania
10.00 a.m.	Discussion
10.40 a.m.	Coffee

Chairman: Dr. P. Dissanayake, Sri Lanka

11.00 a.m.	Village midwives in the Sudan Dr. El Hakim, Sudan
11.20 a.m.	The traditional birth attendant in Brazil Dr. Galba-Araujo, Brazil
11.40 a.m.	The indigenous midwife in India Dr. T. Barns, India
12.00 noon	Discussion
12.50 p.m.	Lunch

SESSION VI - National Policies

Chairman: Professor Sir John Dewhurst, U.K.

2.00 p.m.	Development of Health Education Programmes Dr. N. Scotney, U.K.
2.20 p.m.	The influence of Government Policies on Maternal Child Health and Family Planning Programmes in Singapore Professor S.S. Ratnam
2.40 p.m.	How can health services be made relevant to the needs of mothers and children? Dr. K. Edström, Switzerland
3.00 p.m.	Discussion
3.30 p.m.	Tea
3.50 p.m.	How Can Britain Help? Dr. M. Baker, U.K.
4.10 p.m.	The role of the Royal College of Obstetricians and Gynaecologists Mr. E.A.J. Alment, U.K.
5.00 p.m.	Close of Meeting

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INTRODUCTION AND WELCOME

The President (Mr. E.A.J. Alment): Welcome to the most important Study Group that has ever taken place in this College and to the most important event that we have ever had the good fortune to arrange. I speak with great humility. I think that you come, men and women, like the Magi, bringing not one gift but three. First, your own vast knowledge and experience of maternal and child health in particular parts of the world, from each of you a unique contribution. Second, because you have set aside, and indeed many of you have created the time to come and give to this Study Group, and third, because of the distances that so many of you have travelled to do so.

Many of you are such international figures that you could have had this kind of meeting anywhere in the world, so why in this College and why in 1979? It is our Golden Jubilee Year. Being fifty is a time to look back and see if one is continuing to get right the kind of aid that one supposes to match the needs of other nations, and it is a useful locus to which you should come. This College, if it has any relevance at all in the future outside these islands, has to take to heart what are the new arrangements that arise from better studies of health economics and better understanding of the role of maternal and child health in social systems in the many countries from which we can learn. What is common to us all is the simple universal dignity of woman in childbirth, however we strike off the fractions of resources that any of us in our own circumstances are allowed.

We are grateful to the World Health Organization and to our Ministry of Overseas Development for making it possible for you to come to this meeting. I know it will be fruitful and your Chairmen will guide you wisely. I hope that when you leave in three days time you will have achieved knowledge and the sharing of insight that will be of immense value to large numbers of people.

Professor R.W. Beard (Chairman): I should like to start by telling you of some of the thoughts that Professor Philpott and I had when the possibility of having a meeting on the subject of "Maternity Services in the Developing World" was first raised. We are dealing with the practical needs of the developing world, where facilities are in short supply and where the needs of the people are very great. What we are hoping is that people from different parts of the world will be able to share their experience and perhaps come out at the end with a common view on some of the more difficult subjects that we are to discuss.

CHAPTER 1

MATERNAL AND PERINATAL EPIDEMIOLOGY

EPIDEMIOLOGICAL FACTORS IN MATERNAL MORTALITY

Dr. J.S. Berkeley

Some years ago Professor Sir Dugald Baird wrote - "The 'happy savage' who continues her normal activities during pregnancy and then delivers her baby easily and quickly, with a minimum of discomfort and with no need of practical assistance, has existed for a long time as the stereotype illustrating 'natural childbirth'. How far does this picture of efficient childbearing reflect the facts, and in what circumstances are they true among the peasant societies of tropical countries?" (1).

In this conference we will be considering the whole range of maternal and child health problems, and the varied solutions to these problems which are being applied in different countries. In any discussion of planning and management one must have an overall problem-solving philosophy which includes the collection of essential information, the identification of problems, planning of alternative strategies, selection of a preferred programme, the implementation of that programme, and finally an evaluation which may confirm or modify the original programme. Such a philosophy promotes logical planning.

In considering possible methods of improving the morbidity and mortality among women during childbirth we must first collect all available information about the existing situation in the area or country concerned. To acquire data which can be meaningfully interpreted it is necessary to use epidemiological methods, and in doing this I am taking the definition of epidemiology to be "the study of the distribution of disease and the search for the determinants of the observed distribution". The purpose, then, of any epidemiological study is to search for causal associations, and to provide data necessary for planning and evaluating health care.

I propose, therefore to look at the question of epidemiological factors influencing maternal mortality under the two headings of distribution and determinants. In the short time available it will only be possible to give some general indication of the various factors that need to be taken into consideration, and in no way will it be possible to compare and contrast the existing statistics from different countries.

DISTRIBUTION

Variation in Definitions

In considering the distribution of maternal mortality in a country, or more particularly when we try to compare one country with another, we immediately ask ourselves - what definitions are being used, what is the basis for the collection of data, and how efficiently is it being recorded, and, can we use this data to compare one district with another or one country with another, or data for one time with another time?

I am sure that you are all very familiar with the type of statistics that are available from the United Nations Demographic Yearbook. Yet even as we look at it we begin to question the basis of some of the statistics - can we say that a falling maternal mortality rate is associated with a falling birth rate? Why does Mauritius have a higher maternal mortality rate than Mexico where the birth rate is almost double? Or why is the maternal mortality rate in Sweden half of that in Scotland or Canada when the birth rate in all three countries is similar?

TABLE 1

MORTALITY RATES (1972)

	BR per 1000	PNMR per 1000	MMR per 100,000
Mexico	45	34	130
El Salvador	41	20	105
Malaysia	33	37	
Mauritius	25	60	176
Singapore	23	21	
Japan	19	19	41
Canada	16	19	16
Scotland	15	24	17
Sweden	14	14	7

To revert to first principles we should remind ourselves of the definition of Maternal Mortality Rate. Immediately we are faced with the problem of what is a maternal death? The World Health Organization (WHO) defines a maternal death as one that occurs during or within 6 weeks of the end of pregnancy; in Scotland the Registrar General accepts anything so certified by a doctor as a maternal death; while for other purposes any associated death up to one year of the end of the pregnancy may be included as a maternal death.

In further consideration of the maternal mortality rate the numerator is divided into puerperal and associated causes of maternal death; the definition of the denominator includes all live and stillbirths - but what about the problems of multiple births and women who die in labour before delivering a child?

The International Classification of Diseases sub-divides the puerperal causes of death into five categories. Such statistics as are available from developing countries show that haemorrhage and sepsis are the commonest causes of maternal death. In all countries there has been a reduction in maternal mortality over the last thirty years. This reduction has been particularly striking in developed regions, but in developing countries maternal mortality is still one of the major causes of death in women in their reproductive years. The rate of decrease is directly related to the availability of services and socio-economic factors existing in a country, or in different parts of the same country.

Incomplete Recordings

The recording of the data on which the maternal mortality rates are calculated may also be a source of error. All measures of mortality depend on two information systems, the census and death registration. They are very different from each other in their organisation, but both depend upon accurate and complete demographic data. With census data the individual provides the relevant information and errors may arise from enumerators failing to locate sections of the population, or, from wrong information being given by people who do not understand the reasons for the census and people who deliberately give incorrect information (e.g. to avoid sons being conscripted to the army). When a death is registered the informant is obviously some other person, and they may either not know the correct facts or may deliberately wish to obscure them (e.g. plague or cholera). Different cultural backgrounds may also have a profound effect

on the registration of deaths - for example in a Buddhist country with a belief in rebirth the correct cause of death is of very minor importance compared to concern for the dead person's spirit.

Comparison Between Countries

When we try to compare data from different countries we are faced with the problem of the quality of the basic data. The maternal mortality rate is an incidence rate or a case fatality rate in that the numerator is the number of women dying from puerperal causes during a stated period, and the denominator is restricted to women in the population who gave birth during that time. As we have seen, bias in either of these numbers, or differences in diagnostic or statistical practice make comparison difficult. There may be great differences in the quality of information from different regions in the same country, and any meaningful comparisons within a country or between countries should be based on calculated Standardised Mortality Ratios.

Having sounded a note of caution it is nevertheless very interesting to make comparisons, and as an illustration I have compared some statistics from the Scottish Home and Health Department's enquiry into maternal deaths in Scotland (2) and maternal deaths in the Kilimanjaro region of Tanzania as reported by Armon (3). There is a ten-fold difference in the maternal mortality rates, but the proportion of deaths from puerperal causes are similar at 54% and 56% (Tables 2 and 3).

TABLE 2

MATERNAL DEATHS

	Scotland 1972-75	Kilimanjaro 1971-77
Total births	294,519	24,292
Maternal deaths	92	80
- obstetric	50	45
- associated	42	35
MMR per 100,000	32	329

TABLE 3

CAUSES MATERNAL DEATHS

	Scotland 1972-75	Kilimanjaro 1971-77
Obstetric -		
Abortion	12	4
Ectopic	6	4
Haemorrhage	7	6
Ruptured uterus	1	10
Sepsis	5	7
Associated -		
Enterocolitis	0	12
Epilepsy	4	0

Looking at the causes of maternal death in more detail, it is obvious that in Scotland the greatest number of deaths arose from abortion (7 of these deaths were from legal abortion), while in Kilimanjaro ruptured uterus was the commonest cause of death. Among the associated deaths, epilepsy was the commonest cause in Scotland, and the commonest cause of death in Kilimanjaro was from amoebic, typhoid and miscellaneous enterocolitis. Mortality rates are limited in their usefulness because they refer only to deaths and diseases that cause death - they give no direct information on the occurrence and severity of non-fatal disease.

DETERMINANTS

Having considered some of the problems underlying the rather dry statistical bones of maternal mortality rates as indicators of the distribution of maternal deaths, let us now consider some of the epidemiological factors which are the determinants of the observed distributions. We immediately realise that if we are

going to discuss maternal deaths in a meaningful way there are whole areas for which we require a lot more epidemiological information.

Biological

Biological determinants include age at menarche, age at marriage and age at first pregnancy. We have to take into consideration the customs of the local community in making any assessment of maternal and child health problems. The customs in one community may be very different from another (i.e. the difference in customs between city dwellers and hill people, or the differences between India and an African country). For example Barbara Thompson (4) carried out a very detailed two-year study in a relatively isolated village in Gambia, where girls were married at the menarche to husbands who were up to 45 years older, and thereafter women had to be married continuously in order to be certain of attaining Paradise. Consequently women in that society begin childbearing very young and before they are fully grown, which leads to excessive fetal wastage, frequent pregnancies and poor maternal health.

The spacing of children is important and this will be influenced by the cultural beliefs and practices regarding frequency of intercourse, contraceptive practices and polygamy. We also need information on the parity of women and the birth weights of infants in the community.

Social

Social factors influence practices in relation to childbirth and the management of the newborn. Low socio-economic status is frequently associated with poor educational levels, and these two factors have a significant part to play in any consideration of maternal and child health. Women in this category even in developed countries have been shown to be lower users of medical services and to be less receptive to medical education. In a developing country the woman in the rural community has the added problems of distance and the customs of her society, while her sister who has moved to the city joins the large numbers of shanty dwellers who surround many of the large cities in developing countries.

Many women work right up to the time of delivery, and then resume work a few hours or days later. There are many taboos

about marriage and childbearing, and in different communities very different attitudes to infertile or broken marriages. Social customs may be very difficult to change - for example a recent article from Egypt stated that 90% of the young women interviewed had undergone some form of circumcision, and in the Sudan mothers who try to shield their daughters from the shame and humiliation of this procedure are often thwarted by the girls' grandmothers, who see it as their duty to operate and protect the family honour.

Health of the Community

This is a very important factor in influencing maternal and infant mortality, and without doubt good nutritional standards together with a safe water supply and proper disposal of excreta are the most important factors for the improvement of health in any community. Nutritional standards play an important part in relation to anaemia, infection and the individual woman's ability to withstand the trauma of childbearing. We need information on the local agricultural activities - what crops are grown, are they sufficient for the nutritional needs of the community, are they self-supporting in stocks of food? Food is often relatively short when maximum physical exertion is demanded during the rainy season, a time of increased infection and malaria. We also require information on the prevalance and incidence of communicable diseases which may affect the health of women and children - malaria, tuberculosis, diarrhoeal diseases, amoebiases and ancylostomiasis, venereal diseases, and the common infectious diseases of childhood such as measles that can make havoc in a community.

The impact of nutrition and infection on the physical stature of a woman is well documented. Women who are small and thin may have lower rates of pre-eclampsia during pregnancy, but they will have higher prematurity rates. There may also be ethnic differences in adult stature, and in particular the dimensions of the female pelvis. For example it has been found that Chinese women living in overcrowded and poor conditions in Hong Kong may be below average stature but still have a pelvic brim which is round and capacious in its posterior segment (5).

The Environment

This is a significant factor in the food supply for rural populations. Rains, droughts and natural disasters can all make the difference between famine and plenty. Seasonal variations may also play

their part - a woman who gives birth between harvests will be nutritionally much fitter than the woman who is completing her pregnancy in the lean time just before a harvest.

In underdeveloped conditions a relationship exists between the cultural habit of the people and their physical environment. The basic economy depends for its continuance on the physical conditions. The tools, utensils, houses and other material equipment show direct relation to the given resources. In the urban situation superior knowledge and advanced technology have harnessed and changed the physical environment to a great degree. But in any large city there will always be a group of people who have moved in from the country and lost their rural culture and traditions but have not yet managed to adapt to the socio-economic and cultural patterns of the city - this group often present one of the greatest challenges to maternal and child care. In planning health care policies the relation between environment and culture, and their impact on the attitudes of the people, is often overlooked and the planners are left wondering what went wrong with their scientifically sound schemes.

Quality of Medical Care

Medical care must be considered as one of the factors influencing maternal mortality and morbidity, as well as the health of the newborn child. Maternal deaths are influenced by the type of care that is given. There is often an implicit assumption that every mother is a competent midwife, and in some communities there is a recognised hierarchy amongst traditional birth attendants while in other communities there is no such tradition. Some of the traditional attendants have a lot of knowledge and skill, while others carry out positively harmful practices. The traditional knee-elbow position for delivery in some communities may be very exhausting to the mother; lacerating the vagina with a knife in another community is a potent source of infection.

Medical services tend to be concentrated in towns and cities, and the rural populations of many countries have until recent times had poor or no services. The WHO principle that all health activities should take place at the most peripheral level possible by appropriately trained health workers is now being implemented in many countries. This means that in the planning of a programme for maternal and child health it is more than ever necessary to assess carefully the available resources of manpower and materials in order to make the most effective impact on the defined problems.

CONCLUSION

Having considered very briefly some of the determinants of maternal deaths it is obvious that no single determinant can be taken in isolation when we begin to look at varying policies for improving the situation. So we need to have as broad a base of epidemiological information as possible in order to plan and evaluate change.

If we take as a simple illustration a very primitive community where there has been no attempt to alter the conditions that have existed over the last century, and where maternal and child health are directly affected by the culture of the community, by their formal and supernatural beliefs, and by the environment in which they live, in this situation it would be fair to postulate a high maternal mortality rate and a high perinatal and infant mortality rate.

Into this situation one can then bring a variety of resources and services. We may like to think that medical services are the most important methods of improving the health of the community, but McKeown (6) has pointed out that a careful study of health in more developed countries over the last century shows that the most significant factors in the improvement of health are nutrition and hygiene.

The theme of this conference is "What the community needs". As clinicians, epidemiologists and planners it is up to us to see what is required, to determine how to change the existing situation, and to decide who should carry it out. But without acceptance by the politicians and the people, all our plans may come to nothing.

References

1. Thompson, B. and Baird Sir D. Some impressions of childbearing in tropical areas. J Obstet Gynaecol Br Cwlth 1967; 74: 329

2. Scottish Home & Health Department. A report on an enquiry into maternal deaths in Scotland 1972-1975. H.M.S.O. 1978

3. Armon P.J. Maternal deaths in the Kilimanjaro region of Tanzania. Trans R Soc Trop Med Hyg 1979; 73: 284

4. Thompson, B. Marriage, childbirth and early childhood in a Gambian village. PhD Thesis, University of Aberdeen 1965

5. Chun, D. et al. J Obstet Gynaecol Br Cwlth 1964; 71: 556

6. McKeown, T. The Role of Medicine. Nuffield Prov Hosp Trust 1976

DISCUSSION

CHAIRMAN: Professor R.W. Beard

Professor Beard: This was a most difficult subject to find someone to speak to. When I looked around the world and I asked for advice, I could find no one who was devoting his or her time to the epidemiology of this sort of problem. I wonder why this is? Unless we get our priorities right, the politicians and planners will not know how best to spend their money. Why should there be this deplorable lack of epidemiological studies in this important field?

Dr. Berkeley: Possibly because even within the medical fraternity we are only recently coming to appreciate the need for epidemiological information. In the United Kingdom it is only within the last fifteen to twenty years that we have begun to realise the importance of this, even for ourselves as medical people. To carry this attitude of mind over into the public is very difficult. It is very difficult for people to begin to conceive things in the large situation.

If I can be specific, for a number of years I worked in Bhutan in the Eastern Himalayas, an independent kingdom of just over a million people, in a country about the size of Switzerland. In that situation the Government took the attitude "let us build hospitals". They looked around the world, they saw that hospitals were prolific, and with no thought of asking about the need of the community they started to build hospitals. This is perhaps a fair reflection of many countries. As we visit a number of the developing countries, we see beautiful hospitals but, move five miles out of the city and we find a total lack of services.

It may be national pride; we take pride in showing visitors around our palatial institutions. I would suggest that we in the United Kingdom and in other developed countries have a very heavy burden of responsibility for creating a wrong image of what is required in medicine.

McKeown (1) points out that nutrition and hygiene have had a greater effect on health in the United Kingdom and in other developed countries than any other single factor, yet we still like to think that by introducing ultrasound, or fetal monitoring we shall

profoundly affect what goes on. I would suggest that we affect only a very small proportion of the needs of the developing countries. One might even go further and ask how much effect there is in this country, but that is outside this discussion. There is a growing awareness of the need to get our priorities right before we start.

Professor Hendrickse: In commenting upon the lack of studies of epidemiological factors in infant and maternal mortality, in those countries where there are no recorded statistics detailing how many people have actually died, how can we start to discuss causes of death?

Then, too, there has been a certain conflict of interest in developing countries concerning what they should study. The developing countries are studying development outside their own areas to see what they can introduce and this has put an emphasis on technological progress, etc. People from outside have concentrated on the rural areas where there are nice little packages to be studied without too many complications. Both of these situations are unreal. The situation in the developing countries is dynamic, it is changing. The point has been made about the rural to peri-urban shift, a major problem which most people regard from behind blinkers, because such problems are infinitely more complex than the simple rural problems. In almost every developing country the septic fringe of cities can be found with their enormous problems, yet everybody just closes their eyes and hopes that they will go away, concentrates on the rural exercises and builds the WHO recommended primary health centres, etc. They then put nobody there, or they put in some poor chap with no support and no encouragement, and no on-going supervision, and it is a pure token exercise in many situations.

Dr. Edström: There are difficulties in obtaining data on mortality, and also on actual birth rates, particularly in the rural communities where so many of the deliveries are completely unattended, and many never come to the notice of the health personnel, much less of the registration offices. This is also true for morbidity data which may well be more important since such data might show more clearly the pattern of disease and where the needs are.

The data now existing is almost always based on reports from clinics which give a wrong basis for determining statistics.

Only those who have access to the services come to the services. If only those data bases are used, we shall never be able to study whether the need is only in the rural areas, or the peri-urban areas, and never learn which are the diseases that people will not bring for treatment, and why not.

On the subject of the peri-urban areas, I should like to join Professor Hendrickse in stating that more attention must be paid to this problem than has been paid in the past but would point out that primary care centres can serve urban areas also. In urban settings, the community approach with community workers working together with the health service people, might be the most appropriate.

Dr. Berkeley: Data collection is one of the biggest stumbling blocks in any discussion of this subject.

In many of the schemes for training village workers, we are perhaps carrying forward a medical model in that we are training people to do a watered-down version of what the doctor does. We must keep a very much wider aspect - that we are concerned with medical education and data collection. Unless we get village workers, or people working in the urban slum areas to feed back information we shall lose a vital area of data collection.

Secondly, we have to identify the problems. We have epidemiological techniques for random sampling and for doing prevalence and incidence surveys. We do not necessarily need to go to a total 2 million population and see every person. We can sample and get at least some sort of data on which we can make the next step forward, and as we improve services, or services are improved, so we get a better feedback, and we can constantly improve the quality of data that is coming in, on which future services can be based.

Professor Ratnam: In times past we provided what we thought was right. Times have changed and we must provide what the community wants. Unless we do that, the services will not be used. I can think of many countries where they have services but those services are not used.

Dr. Barns: Could I reinforce what has been said by drawing attention to the paucity of data and warning that statistics such as were shown in that list of maternal mortalities, and such

as published by the WHO, depend on the sort of data that are generated and reported to the WHO in the first place. They have to be interpreted with extreme caution.

Recently I was surprised when, looking through WHO publications, I discovered that for the 400 million people living in Africa, data relating to age, sex and cause of death are only reported in respect of 9.5 percent of them. Of the 2.25 billion people living in Asia, only 9.9 percent are reported to the WHO. The countries which do report these data are the countries with the more sophisticated notification and registration systems, and we are totally uninformed about the really dark areas unless we have sample surveys. There have been very few such surveys on maternal mortality, and in those that have been performed in large populations - such as two very good recent surveys on maternal mortality in Bangladesh - the results have been staggering. We are talking in terms of maternal mortalities of 9 per thousand, 12 per thousand, and even 30 per thousand in Bangladesh not too many years ago.

The statistical validity of the WHO reported figures has to be looked at very carefully when we realise that the cause of maternal death is only specified for five different causes in the International Classification of Diseases which does not give information on the 39 percent of women who die from other non-obstetric causes of maternal death.

Dr. Dissanayake: I am concerned about the practices and the experiences of my own country (Sri Lanka). I would think that the fault really lies with the obstetricians in Sri Lanka who by training and outlook are best fitted to provide treatment in times of crisis. There has been powerful lobbying and when they speak to the politicians and the policy-makers they tend to put their own needs first, whereas it may be that nutrition, health education and so forth are much more important.

Data collection is important. The obstetricians have different definitions of stillbirth, etc. It is up to the College to lay down definitions and given common definitions, all obstetricians should be encouraged to collect certain basic data. We shall then have taken the first step towards identifying the problem.

The second problem is that the obstetricians should learn to work in a team. At present in Sri Lanka they only work on the wards. Communication is confined to that between doctor and

nurse, whereas there should be communication between doctor and patient and the others who are involved in providing care in the community.

Dr. Berkeley: I would agree with Dr. Dissanayake. If I had a further hour to speak I should like to take up the theme of team care. It is a theme that has concerned me greatly from the educational aspect of training people to work together as teams not hierarchies, with someone at the top and the rest on some lower stratum - a team where everybody is contributing equally to whatever service is being provided.

Professor Trussell: I agree with what has been said about the paucity of data collection, yet I am always impressed how simple maternity centres do have records, and yet those records are not consulted. In a village there is always someone who will know about the women who died, yet no one takes full advantage of this information.

References

1. McKeown, T. The Role of Medicine. Nuffield Prov Hosp Trust 1976

THE ROLE OF THE PATHOLOGIST IN THE DEVELOPING WORLD

Dr. R.L. Naeye

Textbooks of tropical medicine often make the point that many of the diseases formerly endemic throughout the world are now largely confined to the developing world. This is not true for the common disorders of the fetus and newborn. The disorders that are major killers of fetuses and newborns in the United States are the common causes of perinatal death in Africa. Very few of the advances in obstetrics and perinatal medicine in recent years have given us new information about the causes of these common disorders or about ways for preventing them. As a result we know less about most of the common fetal and placental disorders than about diseases at any other time of life. Part of our ignorance is the fault of pathologists who as a group have shown little interest in the fetus and placenta. There is now a pressing need for pathologists to overcome this neglect by working more closely with obstetricians, particularly in the developing world, where perinatal mortality rates are so high. Recent studies have shown that many mothers in the developing world are unwilling to accept limits on family size unless they are reasonably sure that their children are going to survive. To give them this assurance we must develop new and effective methods for preventing the common fetal and placental disorders.

INFORMATION FROM COLLABORATIVE STUDIES INVOLVING PATHOLOGISTS, OBSTETRICIANS AND PAEDIATRICIANS

I would like to illustrate some of the ways in which obstetricians and pathologists working together might make progress in reducing perinatal mortality in the developing world. I will briefly review the results of recent collaborative projects between obstetricians, pathologists and paediatricians in Ethiopia, South Africa and the United States.

The collaborative project in Ethiopia started six years ago when a paediatrician there, Dr. Nebiat Tafari, sought aid to determine why one infant in twelve born in Addis Ababa was either stillborn or died in the neonatal period. These deaths were taking

place despite a good city-wide system for antenatal medical care and deliveries. Since routine antenatal and obstetrical care was not solving the problem of too many perinatal deaths Dr. Nebiat concluded that the causes of these perinatal deaths must be known before new programmes could be developed to prevent them.

In Addis Ababa about 40% of births take place in clinics and hospitals which serve all segments of the population. With the help of Ethiopian and USA medical students autopsies were carried out on 1019 consecutive infants who were stillborn or died as neonates in most of the clinics and hospitals in the city (1). These autopsies represented 72% of all fetal and neonatal deaths in these facilities so they were relatively representative of the perinatal deaths in the city as a whole. Hospital and clinic records along with a detailed maternal interview and physical examination on the day after delivery provided 124 additional items of medical, genetic and socio-economic information on most cases. Detailed histologic and bacteriologic studies were undertaken on the organs removed at autopsy. We also studied 400 successful pregnancies.

A similar study was undertaken on Zulus in 1977 in Durban, South Africa in conjunction with Dr. Samuel Ross and Professor Hugh Philpott of the Department of Obstetrics and Gynaecology at the King Edward VIII Hospital (2). To give perspective I will compare some of the findings from Addis Ababa and from Durban with the results of a 1959-1966 study of nearly 60,000 pregnancies in 12 USA cities (3). More than 1,000 pieces of information were prospectively collected on each of these USA pregnancies. Children's growth and development were then followed until the children were eight years of age. We assigned a primary diagnosis to each death in the three studies. This primary diagnosis was intended to identify the disorder that initiated the course to death. In Table 1 is found the perinatal mortality rates for these primary diagnoses from the three studies (1,2,3).

Amniotic Fluid Infection Syndrome

The most frequent primary diagnosis in all three studies was acute amniotic fluid infection in which the fetal membranes were intact at the onset of labour. These infections lead to acute inflammation in the extraplacental fetal membranes, the plate of the placenta and the umbilical cord. Congenital pneumonia often

PERINATAL MORTALITY RATES

	Addis Ababa	Durban	USA
Amniotic fluid infection syndrome	22.0	14.2	6.7
Abruptio placentae	5.3	8.1	3.9
Fetal hypoxia of unknown cause	4.4	6.5	2.4
Congenital syphilis	5.0	3.2	0.1
Premature rupture of membranes	1.4	1.1	3.1
Toxaemia of pregnancy	1.4	0.9	0
Large placental infarcts	1.7	0.9	1.8
Obstructed labour	9.6	3.3	0.1
Congenital anomalies	2.5	2.7	2.7
Compression of umbilical cord	6.9	2.8	0.9
Placenta praevia	1.8	1.0	0.5
Other acute infections	1.1	0.9	0.9
Birth trauma	0.9	3.9	0.6
Twin transfusion syndrome	1.1	0	0.3
Umbilical cord knots, stenosis	0.7	0	0.7
Maternal gestational hepatitis	0.9	0	0
Other disorders	2.7	5.3	5.7
TOTALS	69.4	54.8	30.4

TABLE 1 - Perinatal mortality rates for specific disorders. Details are found in references 1-3.

develops after the fetus has aspirated the infected fluid. We and others have found that only bacteria can produce these findings. Specifically, they are not produced by meconium, gastric juice, amniotic fluid debris or by any one of ten viruses that can infect the placenta and fetus or by Toxoplasma gondii (4,5). Older studies have failed to recover bacteria from up to half of the placentas and fetal lungs from cases with amniotic fluid infections. Recent studies have had much higher rates of recovery because they have used techniques suitable for anaerobes and mycoplasmas (6).

Only a small proportion of amniotic fluid infections are clinically recognised. Most are asymptomatic in fetuses, neonates and mothers (7). These infections can start as early as the first trimester of pregnancy but they are most frequent after 37 weeks gestation (6,7). The bacteria that cause these infections can be any that are present in the mother's vagina and cervix. In the United States bacteria commonly recognised as pathogenic are responsible for most amniotic fluid infections (7). In Ethiopia we often recovered organisms that are uncommon causes of serious disease in the United States. For example, mycoplasma T-strain was recovered in 26% of the amniotic fluid infection-related deaths in Addis Ababa (6).

The bacteria that cause amniotic fluid infections usually reach the amniotic fluid through the cervix. Bacterial invasion of the fetal membranes at the cervical os appears to be a common event, particularly in late pregnancy (7). The frequency of these local membrane infections has varied from 10% in one USA study to more than 50% in some African groups (8,9). Bacteria in these local membrane infections have ready access to the amniotic fluid. When they grow in the amniotic fluid they usually initiate labour within 1-3 days, so many of the neonatal deaths associated with the infections are due to the complications of pre-term delivery and immaturity rather than to sepsis. We have found that a large proportion of the neonatal deaths attributed to respiratory distress syndrome, to hyaline membrane disease and to intracerebral haemorrhage in the United States and Africa are the result of immature infants being delivered as the result of asymptomatic amniotic fluid infections.

Ethiopian fetuses are less apt to survive amniotic fluid infections than are USA fetuses. In Addis Ababa infected fetuses often die during labour whereas such infection-related intrapartum deaths are uncommon in the United States (1,3,6,7). Fetal

undernutrition which is very common in Addis Ababa may explain this difference. Undernutrition appears to affect both the frequency and the outcome of amniotic fluid infections. A low maternal weight gain during pregnancy is associated with both a high frequency and an excessive case fatality rate from amniotic fluid infections (Table 2). As a group amniotic fluid infected neonates have a body and organ growth pattern characteristic of fetal undernutrition both in Africa and in the United States (6,7). Chandra has shown that such undernutrition can impair neonates' defence mechanisms against infections (10).

TABLE 2

FREQUENCY OF DISORDER/1000 BIRTHS

Percent of Optimal Weight Gain

	<25	25-54	55-79	80-120	>120
Amniotic fluid infection	158[c]	115	111	117	131[c]
% who died	13%[c]	4%	5%	3%	6%[b]
Abruptio placentae	28	21	19	17	18
% who died	41%[a]	22%	19%	19%	22%
Large placental infarcts	29	35	29	32	29
% who died	27%[c]	7%	6%	5%	6%
Placenta praevia	10[a]	7	6	6	6
% who died	47%[a]	11%	10%	11%	6%

Lowest value in a disease category is underlined.

[a] $p<0.4$ compared with underlined value, [b] $p<.002$, [c] $p<.001$.

- A low maternal weight gain in pregnancy was associated with both a high frequency and an excessive case fatality rate from amniotic fluid infections and other common antenatal disorders. Details are found in ref 11.

We have found additional clues to how undernutrition influences amniotic fluid infections. Fetal and neonatal deaths due to the infections are most frequent when undernourished mothers have acetone in their urine within 15 days of delivery (11). Hyperketonuria, acetonuria and other evidences of metabolic acidosis develop within 24 hours if pregnant women fast, whereas

it takes 2-4 days of fasting for non-pregnant women to develop such acidosis. The abnormal metabolic environment associated with the acidosis seems to increase the vulnerability of the fetus and neonate to stress from a wide variety of placental and fetal disorders (11). In some developing communities pregnant women eat only once a day and engage in heavy physical work so they may be more prone to metabolic acidosis than women in the industrial nations. We have recently found that maternal urinary tract infections during pregnancy apparently predispose to fetal and neonatal deaths by predisposing to metabolic acidosis (12). Such infections with their resultant acidosis may be a greater threat to the undernourished of the developing world than to the well nourished of the industrial nations.

There are some other consequences of amniotic fluid infection that are not widely known. Such infections are responsible for a large proportion of the excessive perinatal mortality associated with multiple births, incompetent cervix, hydramnios and post-term gestations (7,13,14).

Amniotic fluid infections cause dysfunction in those brain mechanisms that control respiration and appear to be responsible for a large proportion of the apnoeic episodes observed in newborns (15). The infants who have such infection-related apnoea are twice as apt to die as are neonates who have apnoea for other reasons. In the United States amniotic fluid infections are responsible for nearly 40% of the neonatal deaths which follow 5-minute Apgar scores of six or less (16). The prognosis for survival is worse when low Apgar scores are caused by amniotic fluid infections than when they are caused by hypoxia alone (16).

Amniotic fluid infections appear to impair long term mental and motor development, independent of a large number of pregnancy, intrapartum, family and other factors that influence psychomotor development (17). The frequency of the psychomotor impairments increase with the severity of the infections. In our USA study we found that the frequency of IQ values under 80 at four years of age was 68% greater with than without antecedent anmiotic fluid infections (17).

There is clearly a pressing need to find ways to prevent amniotic fluid infections. A number of clues are available on how this might be done. A higher proportion of infections localised in fetal membranes adjacent to the cervical os spread

to the amniotic fluid in Addis Ababa and Durban than in the United States. Part of the explanation seems to be a frequent lack of antimicrobial activity in the African's amniotic fluids. In the United States antimicrobial activity usually appears in the amniotic fluid at the end of the first trimester of pregnancy. Subsequently it progressively increases in titre to reach a peak at term. This antimicrobial activity is at least partially due to the appearance of a polypeptide linked to zinc (18). Levels of this antimicrobial activity are low or absent in most Ethiopian and Zulu amniotic fluids due to a deficiency of zinc (19,20). This zinc deficiency appears to have a dietary origin. Efforts are currently under way to correct these zinc deficiencies. The appropriate dosage of zinc and the needed duration of administration have not yet been determined for the pregnant women we are studying.

The apparent consequence of the zinc deficiency can be seen in Figure 1. In the United States where zinc deficiency is rare, fatal amniotic fluid infections in our study decreased in frequency after mid-gestation as antimicrobial levels rose in the amniotic fluid. No such death rate decrease took place in Addis Ababa where almost all amniotic fluids lack antimicrobial activity. In both the USA and in Addis Ababa the fatal infections became more frequent at term as the cervical segment of the uterus shortened, the cervical os began to open and more bacteria presumably reached the amniotic fluid. It would be a mistake to think that zinc deficiency is the sole cause of antimicrobial deficiency in the amniotic fluid. Zinc levels are almost always normal in USA amniotic fluids but about 15% of such fluids lack antimicrobial activity at term.

We have found that coitus during pregnancy has an adverse influence on amniotic fluid infections. In Table 3 the perinatal mortality rate due to amniotic fluid infections in the United States increased more than five-fold when women had coitus in the month before delivery (5). This increase in perinatal mortality was due both to an increase in the frequency of the amniotic fluid infections and to a three-fold greater death rate from the infections after they had been established. Most fetuses who were exposed to coitus-associated amniotic fluid infections late in gestation survived whereas the death rate was very high pre-term (Table 3). Thus, the advice commonly given to pregnant women that coitus is safe until the last few weeks of pregnancy should be re-examined. At present we do not know if condoms or careful cleansing of the penis and perineum can prevent the infections.

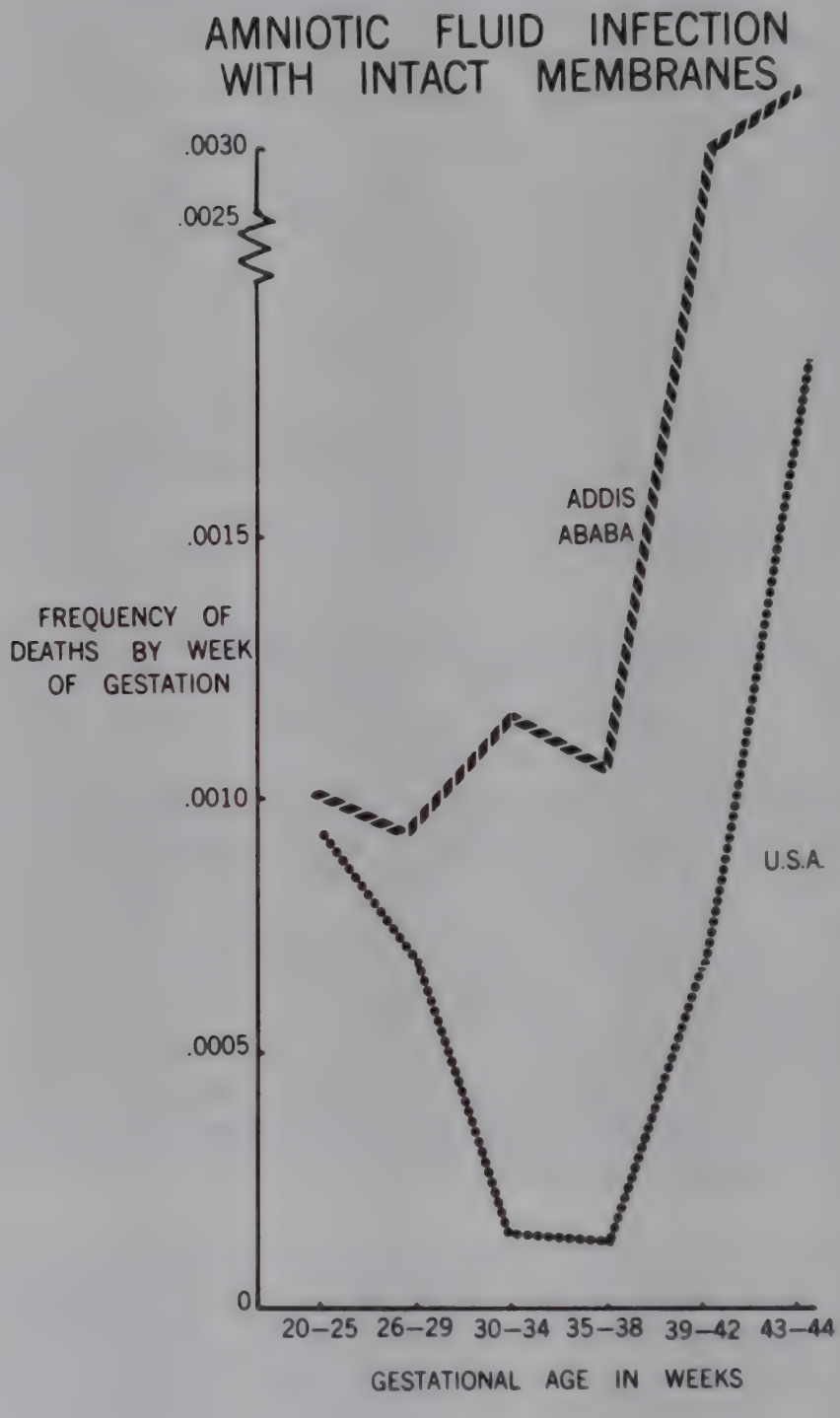


FIGURE 1 - In Addis Ababa, the frequency of fatal amniotic fluid infections was similar to that in the United States at midgestation. Subsequently the frequency changed little in Addis Ababa while it progressively decreased in the USA population under analysis. After 38 weeks of gestation there was a sharp increase in the death rate in both nations.

TABLE 3

Amniotic Fluid Infections	No Coitus	Coitus
(All Gestational ages)		
Cases/1000 births	108	152*
Deaths/100 cases	2	11*
Perinatal mortality rate	2	16*
(Pre-term only)		
Cases/1000 births	127	200*
Deaths/100 cases	7	20*
Perinatal mortality rate	11	40*
(Full term)		
Cases/1000 births	103	128*
Deaths/100 cases	0.9	0.5
Perinatal mortality rate	0.9	0.7

* $P<.001$ compared with no coitus

The perinatal mortality rate due to amniotic fluid infections is increased when women have had coitus in the two weeks prior to delivery.

Abruptio Placentae

Abruptio placentae was the second most frequent cause of death in Durban and in our USA study (Table 1). The pathogenesis of abruptio placentae appears to be more complex than is the pathogenesis of amniotic fluid infections. In both Durban and in the United States abruptio placentae is strongly associated with maternal hypertension, particularly hypertension arising late in pregnancy (21). By contrast, abruptio placentae in Addis Ababa was most frequent when mothers were relatively hypotensive (22). Hypotensive mothers in Addis Ababa are usually undernourished. In all three nations newborn victims of abruptio placentae are undernourished by comparison with infants who survive (21,22).

In the United States cigarettte smoking is a major factor in the genesis of abruptio placentae. The smoking of tobacco causes uterine arteries to constrict with resultant ischemic necrosis of the decidua basalis at the margin of the placenta (21,23). Decidual necrosis at this site seems to serve as a nidus for placental separation. Chewing tobacco probably has the same effect because the nicotine that causes vasopasm and decidual necrosis is readily absorbed through the mucous membranes of the mouth. Women in different third world nations use tobacco in different ways (24). In the United States stopping smoking at any point during pregnancy markedly reduces the subsequent frequency of abruptio placentae (25).

Coitus is another factor that predisposes to abruptio placentae. Acute inflammation in the decidua and placental plate are common in abruptio placentae. We have recently found that such inflammation is usually associated with recent coitus. Thus, many placental abruptions may be the result of decidual damage caused by coitus-related amniotic fluid infections.

Obstructed Labour

The second most frequent cause of fetal and neonatal death in Addis Ababa was obstructed labour due to cephalopelvic disproportion (Table 1). This is a major problem in some other developing nations as well. In Addis Ababa we found that most of the fetal and neonatal deaths due to obstructed labour were the result of maternal delays in seeking medical aid (26). Curfews, long distances to delivery centres and the lack of money for transportation were the main reasons why mothers did not seek medical aid promptly after obstruction developed.

We found that the number of years a mother had been in school had little influence on her decision to seek medical aid early in the course of obstruction, but the informal education that comes with having lived in Addis Ababa for some years had a strong influence in leading mothers to seek prompt medical attention (26). As might be expected mothers who used prenatal medical care services lost few infants to obstructed labour.

UTILISATION OF LOCAL RESOURCES IN DOING PATHOLOGY STUDIES

A few words might be useful about the two African projects. Almost all of the work and much of the planning was done by Ethiopian and South African physicians, nurses, midwives and medical students. Most of the needed funds also came from the two African nations. Nearly 2,000 autopsies were performed in the course of the two studies. The direct cost of these autopsies was modest because the prosections were performed by medical students and house officers. The results of these prosections were satisfactory because only modest training is required to do a competent autopsy on a newborn infant. I personally reviewed all the microscopic sections from the autopsies and placentas from the two African studies over a two year period without seriously interrupting my other work. I am sure that these microscopic examinations could have been done by a specially trained technician because we have taught technicians in the United States to do competent microscopic examinations of the placenta and it is easy to recognise the common microscopic abnormalities in most of the fetal organs. The bacteriologic studies in Addis Ababa were performed by Ethiopian technicians assisted by a specially recruited USA Peace Corps volunteer.

ROLE OF PATHOLOGIST IN QUALITY CONTROL OF PERINATAL SERVICES

Without autopsy and placental studies of the type that I have outlined the relative frequency of fetal and newborn disorders cannot be known with reasonable certainty in any community. Several years ago Dr. Valdes-Dapena compared the clinical causes of fetal and neonatal deaths assigned by obstetricians and paediatricians in the USA before autopsy with the diagnoses made after autopsy (27). A large proportion of the diagnoses made before autopsy were incorrect. I do think it is possible to identify the underlying causes of most fetal and neonatal

deaths anywhere in the world without doing a large autopsy study. If the relative frequencies of diseases that kill fetuses and neonates are not known it will be difficult to plan cost effective preventive programmes.

In summary, the main purpose of our studies has been to find ways to reduce perinatal mortality rates in the developing world. The first necessary step is to identify the responsible disorders. Next their pathogenesis must be established and finally ways found to prevent them. This paper has mainly dealt with the two most common disorders that we have encountered, amniotic fluid bacterial infections and abruptio placentae. To date our studies have produced evidence that deaths from these two disorders might be reduced in frequency by:

(a) insuring that mothers eat an adequate number of calories during pregnancy;
(b) persuading mothers not to fast during pregnancy thereby preventing metabolic acidosis;
(c) providing zinc supplements where the element is seriously lacking in the diet;
(d) persuading couples to avoid coitus during pregnancy or possibly blocking its infectious consequences by the use of condoms and adequate cleansing;
(e) persuading mothers to discontinue the use of tobacco during pregnancy.

Finally I want to express my very great appreciation to my fellow investigators Dr. Nebiat Tafari and his associates in Addis Ababa, Dr. Samuel Ross, Professor Hugh Philpott, house officers and midwives in Durban. These people have been my teachers and I am grateful to them.

References

1. Naeye, R.L.; Tafari, N.; Marboe, C.C. and Judge, D.M. Causes of perinatal mortality in an African city. Bull WHO 1979; 63-65.

2. Ross, S.M.; MacPherson, T.; Wallace, J.; Khatree, M.H.; Naeye, R.L. and Appelbaum, P.C. Unsuccessful pregnancies, report on 200 perinatal postmortems. South African Med J 1978; 53: 828-829.

3. Naeye, R.L. Causes of perinatal mortality in the USA. Collaborative Perinatal Project. JAMA 1977; 238: 228-229.

4. Lauweryns, J.; Barnat, R.; Lerut, A. et al. Intrauterine pneumonia, and experimental study. Biol Neonate 1973; 22: 301-318.

5. Naeye, R.L. Coitus and the development of amniotic fluid infections with intact fetal membranes. (Unpublished observations).

6. Naeye, R.L.; Tafari, N.; Judge, D.; Gilmour, D. and Marboe, C. Amniotic fluid infections in an African city. J Pediatr 1977; 90: 965-970

7. Naeye, R.L. and Peters, E. Amniotic fluid infections with intact membranes leading to perinatal death: a prospective study. Pediatrics 1978; 61: 71-77.

8. Driscoll, S.G. The placenta and membranes in obstetric and perinatal infections. Eds. M. Finland and D. Charles, Philadelphia, Lea and Febiger, 1973; p532.

9. Sinclair-Smith, C.; Woods, D. and Harrison, T. Amniotic fluid in full term deliveries. South African Med J 1978; 54: 31.

10. Chandra, R.K. Fetal malnutrition and postnatal immunocompetence. Am J Dis Child 1975; 129: 450-454.

11. Naeye, R.L. Weight gain and the outcome of pregnancy. Am J Obstet Gynecol 1979; 135: p3.

12. Naeye, R.L. Causes of the excessive rates of perinatal mortality and prematurity in pregnancies complicated by maternal urinary-tract infections. New Eng J Med 1979; 300: 819-823.

13. Naeye, R.L. Causes of perinatal mortality excess in prolonged gestations. Am J Epidemiol 1978; 108: 429-433.

14. Naeye, R.L.; Tafari, N.; Judge, D. and Marboe, C. Twins: causes of perinatal death in 12 United States and one African city. Am J Obstet Gynecol 1978; 131: 267-272.

15. Naeye, R.L. Neonatal apnoea, underlying disorders. Pediatrics 1979; 63: 8-12.

16. Naeye, R.L. Underlying disorders responsible for the neonatal deaths associated with low Apgar scores. Biol Neonate 1979; 35: 150-155.

17. Naeye, R.L. Amniotic fluid infections, neonatal hyperbilirubinemia and psychomotor impairment. Pediatrics 1978; 62: 497-503.

18. Schlievert, P.; Larsen, B.; Johnson, W. and Galask, P.R. Bacterial growth inhibition by amniotic fluid: III. Demonstration of the variability of bacterial growth inhibition by amniotic fluid with a new plate-count technique. Am J Obstet Gynecol 1975; 122: 809-819.

19. Appelbaum, P.C.; Holloway, Y.; Ross, S.M. and Dhupelia, I. The effect of amniotic fluid on bacterial growth in three population groups. Am J Obstet Gynecol 1977; 128: 868-871.

20. Tafari, N.; Ross, S.M.; Naeye, R.L.; Galask, R.P. and Zaar, B. Failure of bacterial growth inhibition by amniotic fluid. Am J Obstet Gynecol 1977; 128: 187-189.

21. Naeye, R.L.; Harkness, W.L. and Utts, J. Abruptio placentae and perinatal death: a prospective study. Am J Obstet Gynecol 1977; 128: 740-746.

22. Naeye, R.L.; Tafari, N. and Marboe, C.C. Perinatal death due to abruptio placentae in an African city. Acta Obstet Gynecol Scand 1979; 58: 37-40.

23. Lehtovirta, P. and Forss, M. The acute effect of smoking on intervillous blood flow of the placenta. Br J Obstet Gynaecol 1978; 85: 729-731.

24. Krishna, K. Tobacco chewing in pregnancy. Br J Obstet Gynaecol 1978; 85: 726-728.

25. Naeye, R.L. Is the outcome of pregnancy improved if a mother stops smoking cigarettes (Unpublished observations).

26. Naeye, R.L.; Dozor, A.; Tafari, N. and Ross, S.M. Epidemiological features of perinatal death due to obstructed labour in Addis Ababa. Br J Obstet Gynaecol 1977; 84: 747-750.

27. Valdes-Dapena, M.A. and Arey, J.B. The causes of neonatal mortality: an analysis of 501 autopsies on newborn infants. J. Pediatr 1970; 77: 366-374.

DISCUSSION

CHAIRMAN: Professor R.W. Beard

Dr. Gebbie (Discussion Opener): It is a sign of the times that this Study Group should have been opened by two speakers who are not obstetricians. Science has moved into the labour ward and into the antenatal clinic. Two hundred and fifty years ago William Smith rushed into the delivery chamber with a pair of forceps. Today it seems that we must rush into delivery chambers with an epidemiologist and a pathologist instead of our forceps. Perhaps that is right and perhaps it is not.

More important than anything else is the environment into which people are born, in which they are brought up and live. In Papua, New Guinea, the perinatal mortality rate for the last month was 18 per thousand for the region. Usually it is around 23 per thousand. We have no epidemiologists, no pathologists, no scientists, just one other doctor and myself with a vacuum extractor and a scalpel. Our Caesarean section rate is under 3 percent, but that has nothing to do with me, or with my colleague. It is because these people live in a type of environment that is conductive to good health and good production of babies.

Professor Hendrickse: In the figures given, but not discussed, the incidence of congenital syphilis in Addis Ababa was 50 times higher than in the U.S.A., and in South Africa it was 30 times higher. By implication, if there is so much congenital syphilis, what about other venereal diseases, and what influence does this have on the cervix and the possibility of infection from that route in terms of the over all thesis of perinatal mortality related to amniotic fluid infections?

Dr. Naeye: Dr. Ross is currently engaged in pursuing this issue on a research basis. From our United States data it appears that local infections in the cervix during labour in themselves do not have any influence on the course of amniotic fluid infections.

The issue of congenital syphilis in Africa is one on which I should say something. The course of the disease appears to be somewhat different to its course in the United States. The lesions in the organs are often far more severe. We see cardiac lesions and severe pancreatic lesions in the African patients, particularly

in Addis Ababa, but also in Durban - far more severe than anything that we have ever seen in the United States. This raises the possibility that the nutritional standards or the defence mechanisms of the fetus against infections are having some influence on the course of the disease. That is one issue.

Dr. Ross will later discuss the very great problem of the need for more sensitive and less expensive tests for syphilis and the frequency of serological testing during pregnancy, which is a crucial point, because we are obviously still losing large numbers of children to congenital syphilis even in the sophisticated high quality medical system of the kind they have in Durban.

Professor Caldeyro-Barcia: In the incidence of infection in the amniotic fluid and its influence on the fetus, did Dr. Naeye see any influence on the timing of the rupture of the membranes, either artificially or spontaneously?

Dr. Naeye: Yes. The membranes are ruptured for good and sufficient reasons and there is no evidence of infection at the time of rupture. There is no change in the frequency of infections until about the 8th or 9th hour and then the frequency of infections begins to rise progressively. It rises very rapidly after that point and after about 20 hours the rate of infection is quite high.

The converse, the question of whether amniotic fluid infections might cause premature membrane rupture, is a very important question and one that we are working on. We know that it causes some membranes to rupture. Some membrane ruptures are caused by the infections and are not the consequence of infections, but how many in the various population groups I am not prepared to say at this point.

Professor Beard: If amniotic fluid infection was a cause of premature rupture of membranes then there should be a high incidence of premature rupture of membranes in Addis Ababa. Is this so?

Dr. Naeye: I think that is more a function of the character of the bacteria. It looks as though certain bacteria that have elaborate, strongly proteolytic enzymes are far more apt to cause membrane rupture than are the relatively non-pathogenic bacteria we so commonly see in Addis Ababa. They just do not elaborate enough - have a strong enough, inflammatory response in many cases - to cause this rupture of the collagen and the elastic tissue of the membranes.

We also see a lot of premature rupture of the membranes in Addis Ababa.

Dr. Belmont Williams: Apart from the high incidence of intra-uterine infection, which has a direct bearing on perinatal mortality as well as maternal mortality, I wonder whether Dr. Naeye might say something about malaria? This is a very important infection in Sierra Leone.

Dr. Naeye: All that I know about malaria and the outcome of pregnancy I have learnt from books and I would not presume to offer a comment at this Study Group. There are many participants who know much more about it than I do. In all the places where I have worked there has been no malaria.

Mr. Lawson: In those areas where there is a high incidence of acquired immunity in pregnant women, malaria has a very limited unimportant direct effect on fetal survival. It is the indirect effects that are so important. The indirect effect reduces acquired immunity during pregnancy, and therefore malaria, having previously been relatively unimportant (we are talking of falciparum malaria) as a cause of morbidity and mortality in adults in areas where it is known to be endemic, becomes important in pregnancy because of the decline of immunity. Thus malaria becomes important as a cause of premature labour, impaired birth weight, and of serious maternal conditions such as anaemia which may have a serious effect on the neonate.

Malarial infection in the neonate is relatively unimportant except in the non-immune.

Dr. Naeye: We found that changing sexual partners during pregnancy increases the frequency of amniotic fluid infections about threefold in our United States studies and in our studies in Addis Ababa. In such individuals it is quite common to see rates of infection in the extra-placental membranes at term of over 50 percent.

Professor Beard: May that not be related to the group of people who are liable to change their sexual partners rather than just the fact of changing partners?

Dr. Naeye: I could not answer that with certainty, except to say

that the physicians who are working in the free clinics in the United States find that when a woman comes in with a urinary tract infection the first question that needs to be asked is one that will determine whether she has suddenly changed sexual partners, and there is this very high association. This raises the possibility that it is due to either changing flora or immunity to the flora that one sexual partner has introduced.

Dr. Ebrahim: May I draw attention to another important infection which in my experience is the important cause of death in the newborn period - neonatal tetanus. In a study carried out in the north of India the number of deaths from neonatal tetanus alone was 20.3 per thousand births, yet this is a highly preventable condition. What was the rate of deaths from neonatal tetanus in either Ethiopia or in South Africa?

Dr. Naeye: In my experience it was zero. I have never seen a case of neonatal tetanus in either location.

Dr. Ebrahim: Could this be because these were women who had access to antenatal care and who were possibly immunised with tetanus toxoid during pregnancy?

Professor Philpott: There were 120 cases of neonatal tetanus in Durban in 1978. All of these cases came from the 30 percent of the pregnant women who did not receive antenatal care and who delivered at home. Among the 70 percent of pregnant women in the population who did receive antenatal care there were no cases of neonatal tetanus. These women are not given tetanus toxoid antenatally. They either deliver in a clinic or hospital, or if they deliver at home before they can get to the clinic, they bring their baby to the clinic for a cord dressing.

Dr. Naeye: In Addis Ababa we got a substantial number of rural women who came in never having had medical care until the time when they arrived with a delivery problem.

Professor Hendrickse: To explain the anomaly which one sees so frequently, neonatal tetanus in the Third World is dropped in the paediatrician's lap. The obstetrician takes no responsibility for it, and will often not know that it exists because it has happened after the perinatal period.

Dr. Ebrahim: One comment on the definition of neonatal mortality. I have had a running battle with the WHO definition which restricts it to one week. That would exclude all cases of neonatal mortality due to tetanus.

Professor Beard: We should get this clear. My understanding is that perinatal deaths include up to one week and neonatal death is up to 28 days. Is that generally agreed?

(General agreement)

Miss Kwast: Has any study been done of amniotic fluid infection syndrome in relation to communities where polygamy exists?

Dr. Naeye: In many of the traditional African cultures, intercourse is strongly prohibited during pregnancy, and it has often been recommended that polygamy might be the solution to this problem.

Dr. Edström: Dr. Naeye said that in Addis Ababa the population included was all those delivered in hospitals and clinics, which covered some 40 percent of the deliveries. Did he collect any data on the population that did not deliver in the clinics?

Dr. Naeye: No. I know very little about the other 60 percent of the population in Addis Ababa. We are very mindful about the problem of the representative nature or lack of representative nature of the sample that we examined. The Ethiopian investigators who are involved in the project felt very strongly that the sample was representative. The hospital and clinic populations that we utilised were from the very poorest part of the city. Many of our patients were so poor that they did not even possess a rag in which to wrap the child to take it home from the hospital. But, that does not mean that the population was the same as a destitute poverty-stricken population that did not look for medical care at all.

Dr. Barns: The discussion and the Paper have brought out the importance of not treating autopsy evidence in isolation, and the importance of combining it with a study of the antecedent events that have led up to perinatal deaths. First, there are considerable difficulties in obtaining a representative sample of perinatal deaths in a community, particularly in a tropical country. Babies are buried very rapidly before a doctor, or a pathologist, can get to them. Much more importance should be attached to,

and much more information can be obtained from, a careful enquiry - one might almost call it a verbal autopsy - on the events which have led up to the perinatal death.

If I might illustrate this with a study we carried out some years ago in the Punjab on perinatal mortality. We found that there was a high incidence of death from intra-uterine asphyxia, and it was not until we became more familiar with the customs of that part, whereby the traditional birth attendant was in the habit of calling in a local practitioner who would give pituitary extract to the patient in the first or second stage, that we began to find some explanation. Curiously we did not see many ruptured uteri as a result of this practice, but it did explain 8 percent of the perinatal deaths that we saw during that study.

Similarly, the cause of many of the first week deaths in that study would not have been apparent purely on autopsy. We realised that a further 8-10 percent were the outcome of the local practice of withholding the breast during the first three days after birth and feeding the baby with spoonfed buffaloes' milk, with the outcome that many of these babies, particularly the underweight babies, the premature babies with a poor sucking reflex, were killed by aspiration of spoonfeeding.

Very few autopsy series of perinatal deaths in the Third World are available, apart from those presented by Dr. Naeye. Nonetheless, a great deal of information can be obtained from the community by this type of verbal autopsy.

Dr. Naeye: And the midwives tend to know so much. I cannot tell how many times we have been stuck for an explanation of some phenomenon. I have asked all the physicians and no information has been forthcoming, then I have been to the midwives and they do seem to know.

CUBAN PERINATAL MORTALITY SURVEY 1973

Dr. S. Rodés

Introduction

The main objective of the Cuban Perinatal Survey was to describe the characteristics of perinatal mortality in Cuba with regard to biological and social factors that determine its magnitude. Another objective was to evaluate the quality of medical care given to mothers during pregnancy and delivery and to the newborns in their first week of life. The field stage of the Survey was carried out by the Ministry of Health and the analysis by the Institute of Health Development. The World Health Organization collaboration was available from the beginning through the advice of Professor Neville R. Butler and Professor Harvey Goldstein. The Survey included all births with a birthweight of 1,000gm or more occurring in the whole country in one month and all perinatal deaths within three months.

Special attention was paid to keeping maternity services working as usual, without any extra effort to improve services, since this would render biased results.

General Results

During the first week of the Survey, from 1st to 7th March 1973, there were 4,441 deliveries, of which 4,396 were singletons and 45 were twins. The mortality rate for singleton births during this week was 22.1 per 1,000 births, and for all births was 23.9.

During the three month period March, April and May 1973 there were 1,508 perinatal deaths of which 1,410 were among singleton births and 98 among twin births. There were 700 stillbirths and 710 neonatal deaths among the singleton deliveries and 39 stillbirths and 59 neonatal deaths among the twins.

Social and Biological Factors

Besides other factors, pregnancy outcome is influenced by the personal and social characteristics of mothers. These characteristics are multiple and they act in combination, making their

analysis a complex problem. Only three variables relating to perinatal mortality will be considered here: maternal age, parity and educational level of the mother.

Grouping mothers by age at the time of delivery showed that the largest group was between 20 and 24 years old, and in these mothers the perinatal mortality rate was low, 19.6 per 1,000 (lower than the overall rate 24.6). In the group of 19 years or less the rate was higher, 26.4 and after 25 years it was also high, reaching the highest values in the group of 35 years and over. These results reflect the gradual deterioration of reproductive efficiency with rising maternal age.

Almost 70% of mothers were delivering their first, second or third baby. Six percent had delivered 8 children or more. The lowest mortality rate was in the one and 2 parity group. For nulliparous women it was slightly higher and for multiparous (more than three babies) it increased even more.

Seventy percent of mothers in the study had not finished primary school. Their mortality rate was 33.2 per 1,000. This figure decreased to 17.8 in those mothers who had finished primary school. Educational level and mortality rate were highly related.

Medical Factors

In Cuba, before 1959, most of the deliveries occurred in homes, without medical care, with the help of self-trained midwives as is still the case in many other countries. After that time, one of the main aims of the Ministry of Health was to increase institutional deliveries, with medical and skilled midwifery care.

During the period under study, 96.6% of deliveries took place in maternity services or rural hospitals. The mortality rate was 24.0 per 1,000. The remaining 3.4% took place in home, their mortality rate being 43.1.

Nearly 90% of women received antenatal care in their policlinic, and went to hospital only for delivery. This group had a perinatal mortality of 24.8 per 1,000. A group representing 9.7% of mothers received antenatal care at out-patient hospital clinics. It is mainly women with high obstetrical risk or with previously diagnosed diseases who attended these clinics. This alternative was not very strict and some normal patients were included for several reasons. This group had a mortality

rate of 16.4 per 1,000. Less than 1% (0.9%) did not receive antenatal care. This small group had a mortality rate of 85.2.

Considering the number of visits to the clinic, 13.7% of women attended one to 3 times; 44.5% made four to seven visits; 42.6% eight or more visits. Only 0.9% never visited the clinic. Information was unknown in 1.6% of mothers. A progressive decrease of mortality rate was observed as the number of visits increased, particulary between 8 and 11. Over this number mortality rates start rising. An explanation for this paradoxical finding is that abnormal pregnancies began their antenatal care earlier and had more frequent visits than normal ones. Among those high risk pregnancies, in spite of special antenatal care, a high mortality rate is to be expected.

Neonatal Aspects

For the Cuban Perinatal Survey, hospitals were classified according to the number of deliveries per year and whether they had neonatal special care units. Fifty six percent of the babies were delivered in hospitals that had more than 5,000 deliveries and special care units. Twenty three percent of the deliveries took place in hospitals with 1,000 to 5,000 deliveries, most of them with special care units, and 18% of births occurred in small hospitals, with less than 1,000 deliveries per year - generally located in places of difficult access and only responsible for care of normal pregnancies, without obstetrical risk. These hospitals do not have neonatal special care units. Seventy percent of births occurred in hospitals with special care units, the neonatal mortality rate being 13.4 per 1,000 live births. This figure is higher than the overall neonatal mortality rate. Twenty percent occurred in hospitals without neonatal care units, and the rate was 9.4%, lower than the overall rate. We emphasise that in these hospitals only pregnancies without any obstetrical risk received medical care.

The Apgar score is used in the whole country to evaluate newborn status. Only 2% of the babies were classified from 0 to 3 score; to this group correspond 40% of the deaths, and the neonatal mortality rate was 207.2 per 1,000 live births, 17 times higher than the average. Five percent of the newborns were scored as 4 to 6; in this group were included 25.3% of the neonatal deaths, mortality rate being 50.1 per 1,000 live births. More than 92% of the newborns were classifed as 7 or more according to the

Apgar score; 34% of the deaths had this score assigned, which is higher than that corresponding to the newborns with Apgar score 4 to 6, but the neonatal mortality rate of this group was 4.5 per 1,000 live births.

Mean weight and standard deviations for each gestational age between 37 and 43 weeks were calculated. Cases from each gestational week up to the 37th week were not enough for this calculation. Only 6% of the births occurred before the 37th week.

The mean weight for newborns between 37 and 43 weeks was 3.171gm. The highest weight average was obtained in the 42nd week, but there was very little difference for weight means from 40 to 41 weeks.

Values for standard deviations always ranged between 400 and 470gm in the group studied. For each gestational age the average weight was calculated with two standard deviations above and below the mean. The curves calculated from the survey data showed that a baby born between 37 and 43 weeks of gestational age with a birthweight of 2,400gm is not below two standard deviations from the mean weight for this gestational age.

Pathology Results

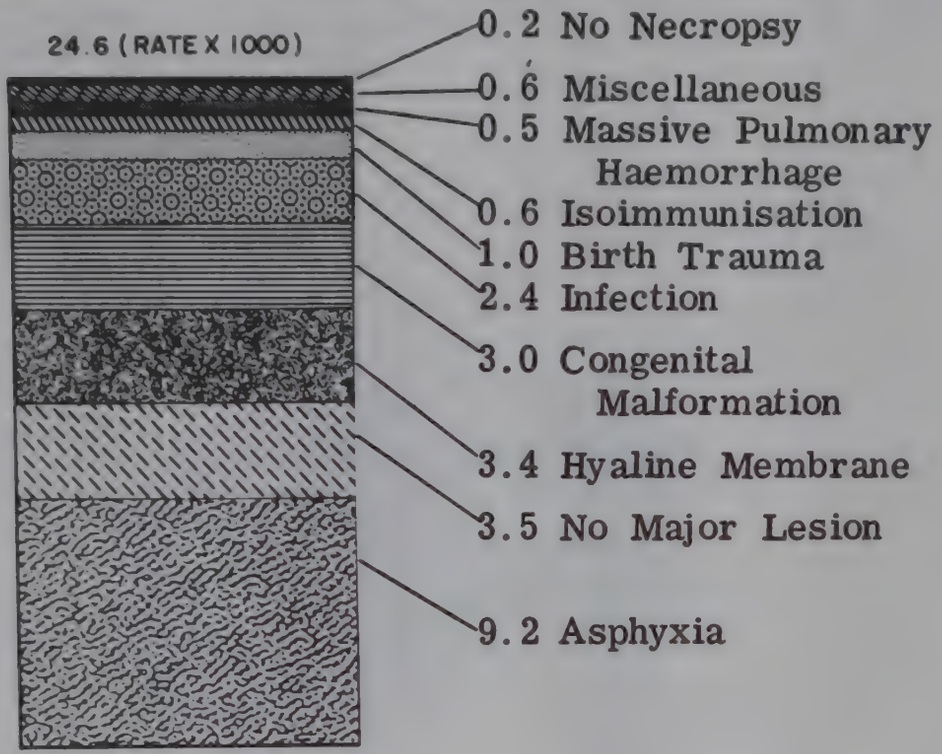
During the Cuban Perinatal Survey 1,508 perinatal deaths were recorded. Postmortem examinations were performed in 1,498 deaths accounting for 99.3% of the deaths. One thousand four hundred and ten deaths belonged to singleton pregnancies, and 1,400 were brought to necropsy, also accounting for 99.3%.

An histological examination of all organs of fresh corpses was done. In the macerated ones lung samples were obtained, since the lungs are the organs that keep staining affinities for a longer period after death. Macro and microscopic diagnosis of slides were made at provincial pathology laboratories and in some regional ones. Histological slides and their corresponding forms were verified at the Reference Centre. A list of the most frequent findings in perinatal pathology was made, similar to the one utilised in the British Perinatal Survey held in 1958. This made it possible for pathologists to select in each death one of the findings in the series, applying previously established criteria. This series of findings is not a classification, but has the advantage of allowing further grouping in later studies.

The perinatal mortality rate was 24.6 per 1,000 births, and the necropsy findings are shown in Figure 1.

FIGURE 1

Cuban Perinatal Survey, 1973
Perinatal Mortality Primary Necropsy Findings



There was a remarkable number of deaths without specific lesions on postmortem examination. These were mainly antepartum deaths with nonputrefactive changes which prevent recognition of lesions derived from asphyxia. Deaths of babies of short gestational age with tissue immaturity as the only finding were also included in this group.

Time of Deaths and Necropsy Findings

Stillbirths and neonatal deaths had a very similar proportion in the Cuban Perinatal Survey. Most of the fetal deaths occurred before the onset of labour and had a higher rate (Table 1).

In some antepartum deaths, lesions corresponding to asphyxia were found, but no specific lesion was found in many of the deaths, particularly in the macerated stillborns. Congenital

TABLE 1

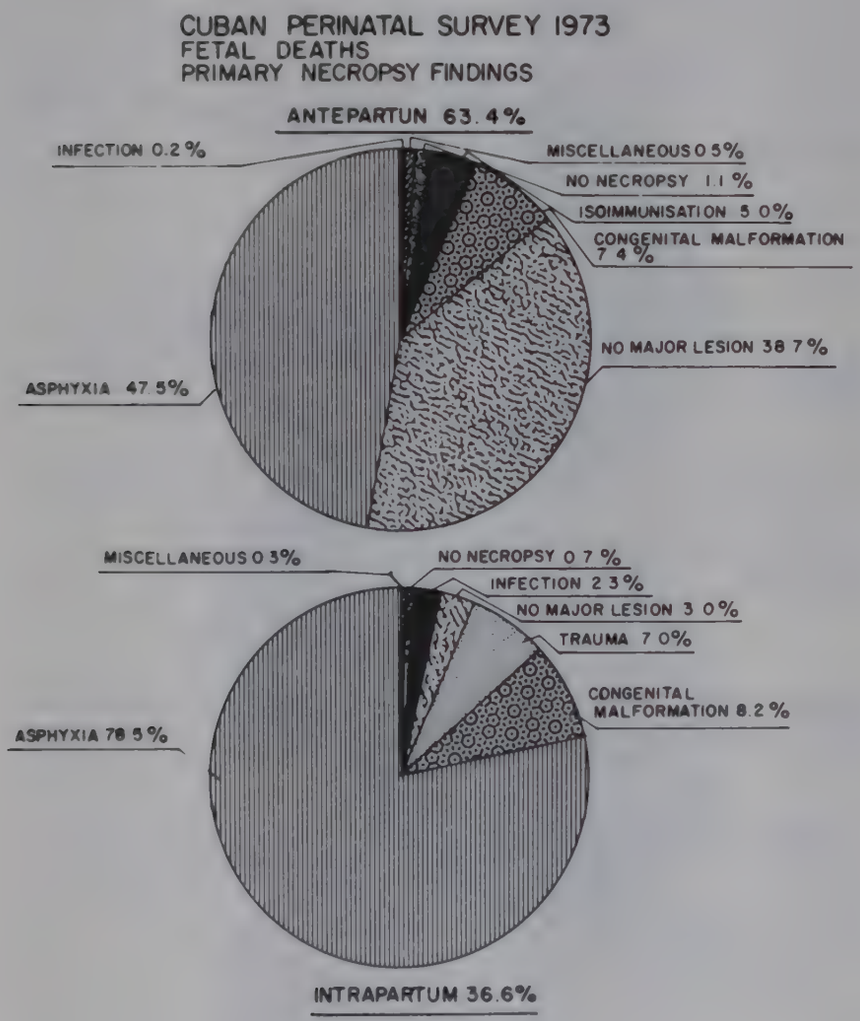
CUBAN PERINATAL SURVEY 1973
STILLBIRTHS AND NEONATAL DEATHS

Perinatal deaths		Number	%	Rates per 1 000
Fetal Deaths	Antepartum	444	1,5	7,7
	Intrapartum	256	18,2	4,5
	Total	700	49,7	12,2
Neonatal Deaths		710	50,3	12,5
Total		1 410	100,0	24,6

malformations or isoimmunisation were identified in a small group. In intrapartum deaths, asphyxia accounted for more than 75% of deaths. There was a small group of congenital malformations and birth trauma. The number of intrapartum deaths without specific lesions was small (Figure 2).

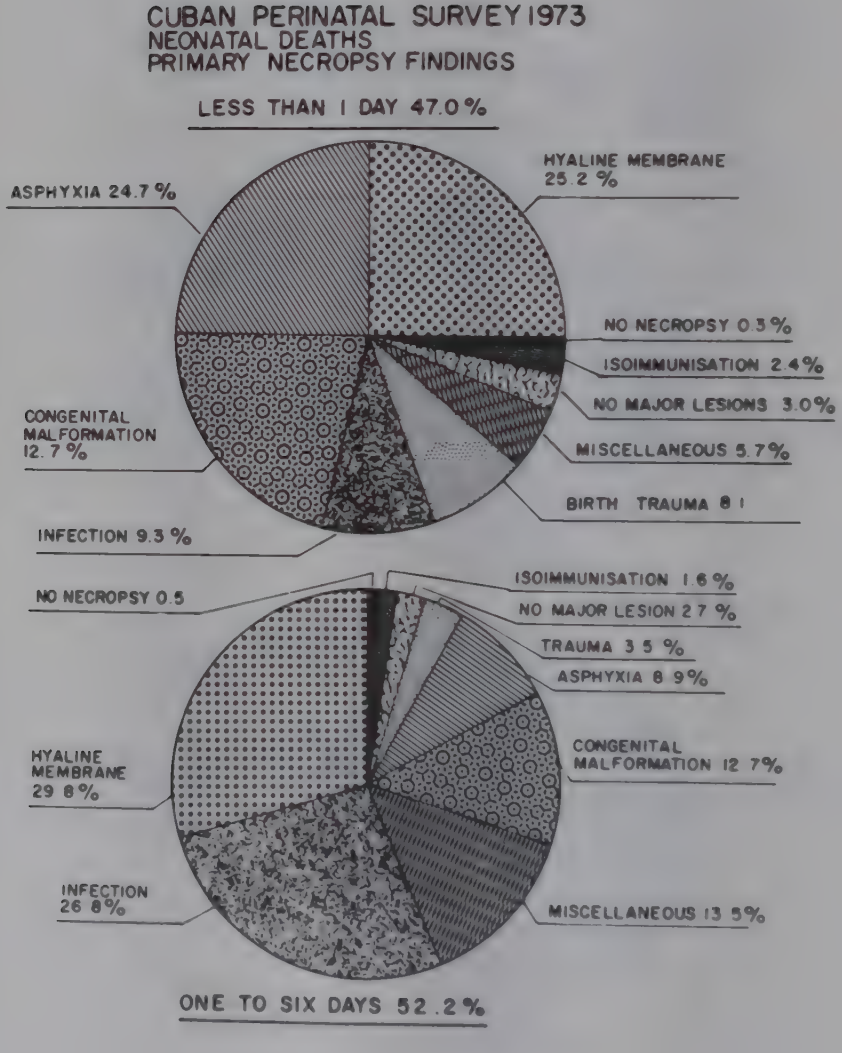
Neonatal deaths were divided into two groups: first day deaths (47%) and deaths from the 2nd to the 6th day (52.2%). In 0.8% the specific day of death was not stated.

FIGURE 2



The highest proportion of deaths due to lethal congenital malformations, asphyxia and trauma occurred in the first day of life. During the following days of the early neonatal period, infections were an important cause of death. Hyaline membrane was the cause of death in 25% of the first day deaths and of almost 30% in the remaining six days of the first week (Figure 3).

FIGURE 3

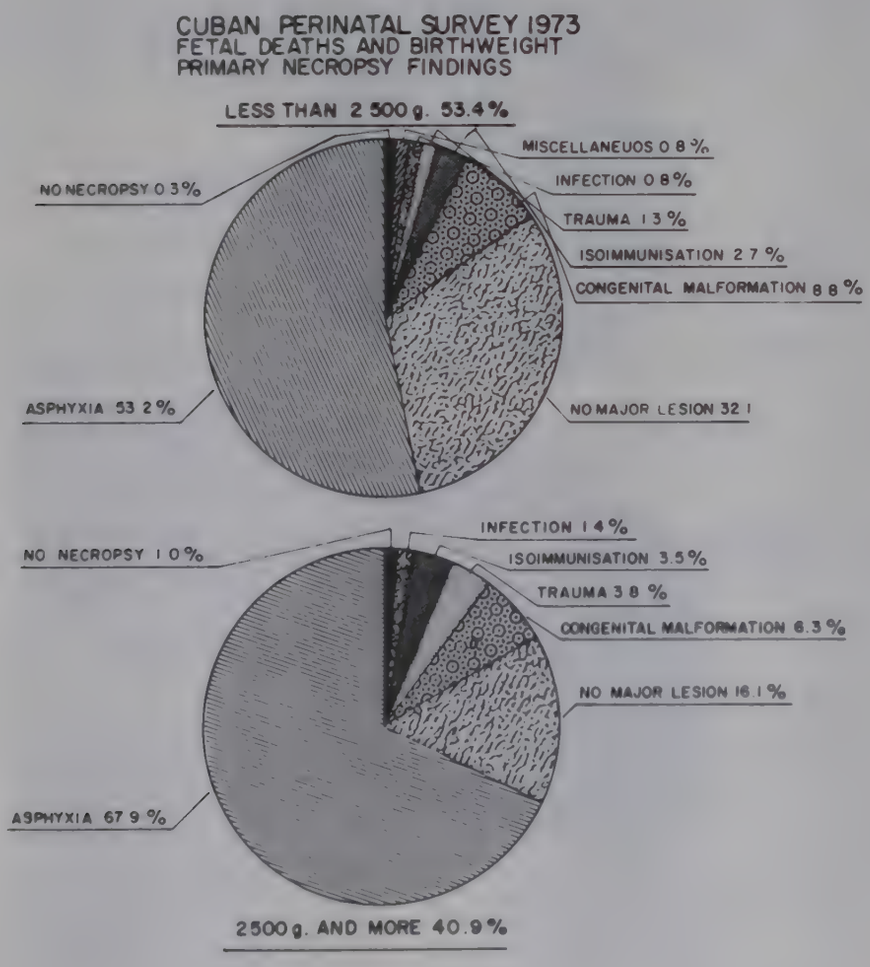

CUBAN PERINATAL SURVEY 1973
NEONATAL DEATHS
PRIMARY NECROPSY FINDINGS
LESS THAN 1 DAY 47.0%
HYALINE MEMBRANE 25.2 %
ASPHYXIA 24.7 %
NO NECROPSY 0.3%
ISOIMMUNISATION 2.4%
NO MAJOR LESIONS 3.0%
MISCELLANEOUS 5.7%
BIRTH TRAUMA 8.1
CONGENITAL MALFORMATION 12.7 %
INFECTION 9.3 %
ISOIMMUNISATION 1.6 %
NO NECROPSY 0.5
NO MAJOR LESION 2.7 %
TRAUMA 3.5 %
ASPHYXIA 8.9%
CONGENITAL MALFORMATION 12.7%
HYALINE MEMBRANE 29.8%
INFECTION 26.8%
MISCELLANEOUS 13.5%
ONE TO SIX DAYS 52.2%

Birthweight and Necropsy Findings

Among singleton births, 8 percent had a birthweight less than 2,500gm and among total deaths 52.8% were also of that birthweight. Mortality rate for birthweights of 2,500gm or more was 11.6 per 1,000 and 152.5 for those of 2,500gm or less. These figures show the effect of birthweight on perinatal mortality. More than 50% of stillbirths had a birthweight less than 2,500gm.

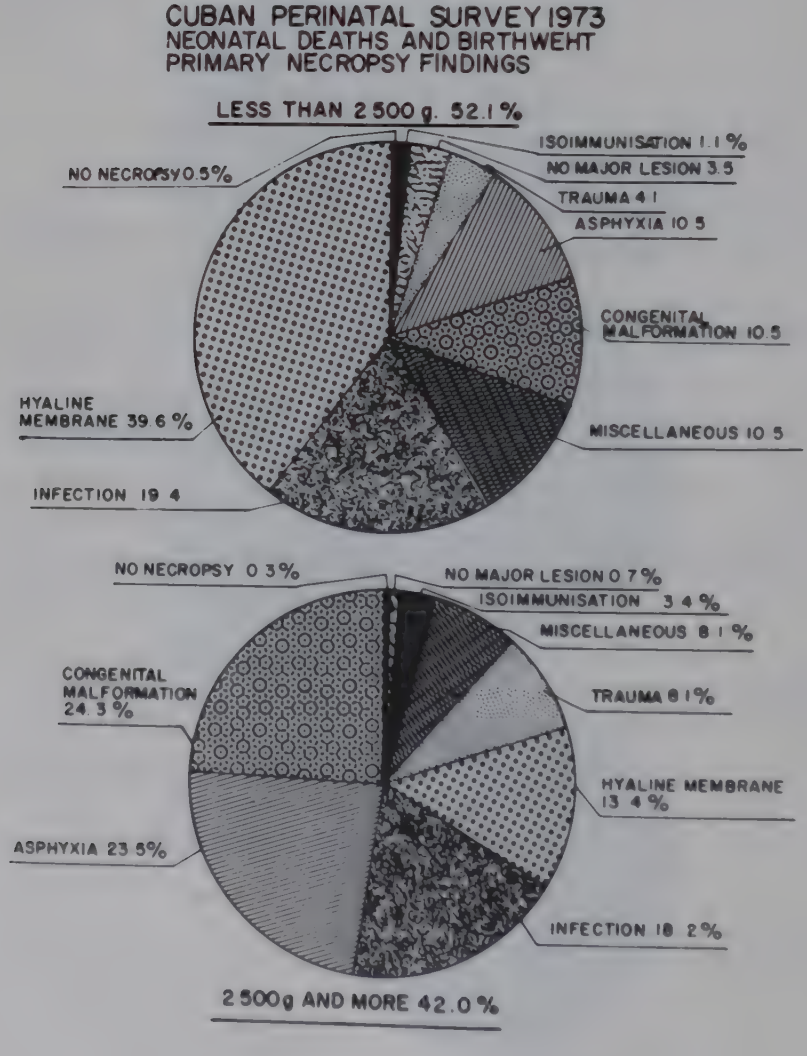
Asphyxia was the most common necropsy finding in this group. Congenital malformations and isoimmunisation were found in a small percentage. In stillbirths of 2,500gm or more the proportion with signs of asphyxia was higher and the ones without specific lesions decreased to a half. The percentage with congenital malformations and isoimmunisation was small (Figure 4).

FIGURE 4


CUBAN PERINATAL SURVEY 1973
FETAL DEATHS AND BIRTHWEIGHT
PRIMARY NECROPSY FINDINGS
LESS THAN 2 500 g. 53.4%
MISCELLANEUOS 0 8 %
INFECTION 0 8%
TRAUMA 1 3 %
ISOIMMUNISATION 2 7 %
CONGENITAL MALFORMATION 8 8 %
NO NECROPSY 0 3%
ASPHYXIA 53 2 %
NO MAJOR LESION 32 1
INFECTION 1 4%
NO NECROPSY 1 0%
ISOIMMUNISATION 3.5%
TRAUMA 3 8 %
CONGENITAL MALFORMATION 6.3 %
NO MAJOR LESION 16.1 %
ASPHYXIA 67 9 %
2500 g. AND MORE 40.9%

Among neonatal deaths the proportion of birthweight of less than 2,500gm was also over 50%. In this group hyaline membrane disease was the most important cause of death on account of its frequency, since it was found in more than 33% of deaths. Other causes in this group were, in decreasing order: infections, congenital malformations, asphyxia and obstetric trauma. Congenital malformations were the first cause of death among the babies with birthweight of 2,500gm and more. Infections accounted for a high percentage. In the group of 2,500gm and more birth trauma had twice the incidence found in low birthweight babies. Hyaline membrane had a lower incidence in the normal birthweight group (Figure 5).

FIGURE 5



Sex and Primary Necropsy Findings

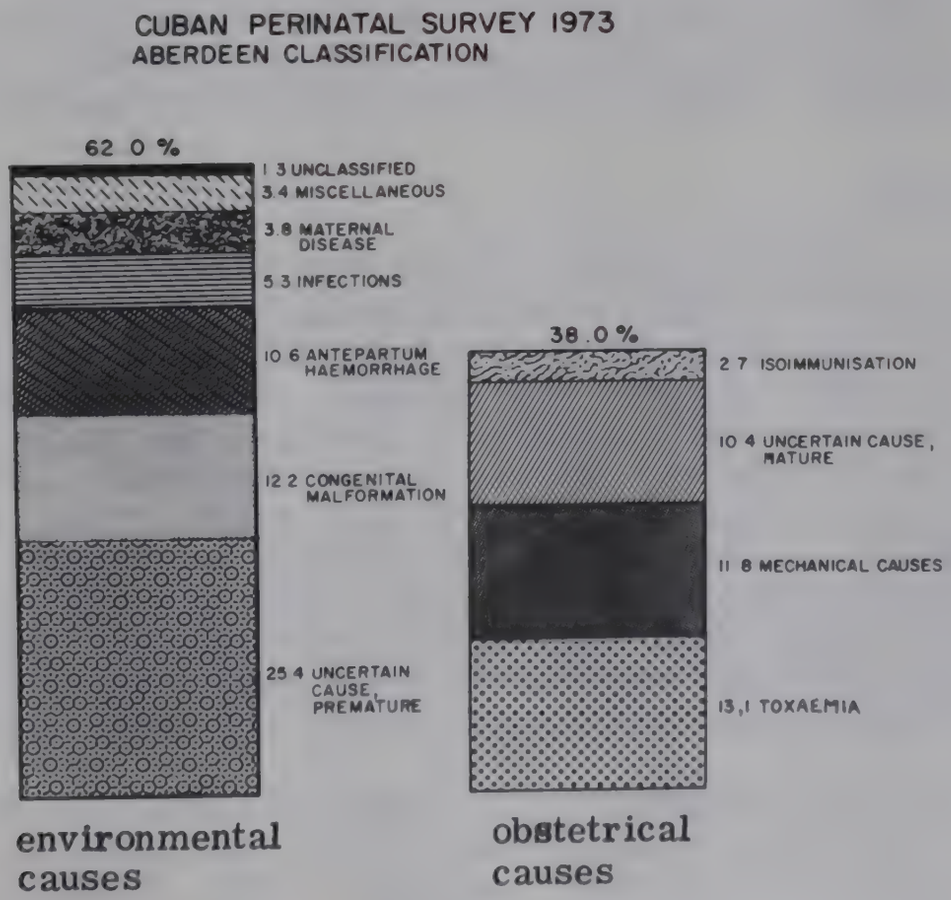
Differences in perinatal mortality rates of the sexes were found. The male rate was higher than the overall rate (27.1 per 1,000 births) and the female rate was lower (21.7). An explanation for this interesting finding was not found. Of course, specific rates for the necropsy findings were higher in males in almost every finding.

The rate for congenital malformations was 3.0 per 1,000 in both sexes. It was different from other studies, with a higher rate for females.

Aberdeen Classification

A working team consisting of obstetricians, neonatologists and pathologists grouped the perinatal deaths according to the Aberdeen Classification. It divides the causes of death into obstetrical and environmental deaths. In our survey 62.0% of deaths were due to environmental causes and the remaining 38.0% were obstetrical deaths (Figure 6).

FIGURE 6



In 25.4% the babies were premature (birthweight less than 2,500gm) and their cause of death was uncertain. This figure highlights the effect of low birthweight on perinatal mortality. It is a well known fact that multiple factors determine birthweight, and most of them cannot be modified by medical care alone and on the other hand the improvements in socio-economic status operate rather slowly.

Deaths from antepartum haemorrhage are more amenable to reduction by obstetrical intervention, although they are included under the environmental causes. They accounted for 10.2% of deaths.

Infections were responsible for 5.3% of deaths. This is a low rate but it is important to point out that 96.6% of births took place in maternity services, or other kinds of hospital. Only 3.8% of deaths were directly related to mothers' diseases. In 3.4% the causes of death could not be included in any of the forementioned groups. Only 1.3% of deaths could not be classified because the necessary data were not available. Among obstetrical causes toxaemia had the highest number of deaths, accounting for 13.3% of the total deaths.

Mechanical causes accounted for 10.3% of the deaths. Mature babies dying from an uncertain cause occurring during labour, such as asphyxia of undetermined etiology, accounted for 10.4% of the deaths. Finally, deaths due to isoimmunisation were 2.7%.

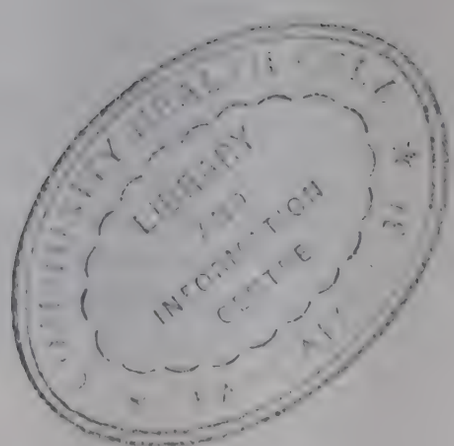
Conclusions

In 1973 a National Perinatal Survey was carried out in Cuba. Data of the total births occurring during one week, all low birthweights in one month and all perinatal deaths in three months were recorded, tabulated and analysed. Information about biological and social conditions of mothers, and medical care offered to mothers and children was gathered and studied. Deaths were grouped according to their causes, time of death, birthweight and sex. They were tabulated according to the Aberdeen Classification. It should be pointed out that 99% of mothers had antenatal care, 96% of deliveries took place in maternity services, hospitals or other kind of health units and 70% of babies born had neonatal special care units available.

The perinatal mortality rate for singleton births was 24.6. In 99.3% of deaths postmortem examination was performed. The first causes of death were: asphyxia, hyaline membrane disease, congenital malformations and infections.

CHAPTER 2

APPROACHES TO REDUCING MATERNAL AND PERINATAL MORTALITY



WH-110

APPROACHES TO REDUCING MATERNAL AND PERINATAL MORTALITY IN AFRICA

Professor K.A. Harrison

With the considerable variations in the standards of health care and in the climatic and socio-economic conditions from one part of Africa to another, there are consequent differences in emphasis when considering approaches to reducing maternal and perinatal mortality. I have chosen to examine in detail the delivery of maternal health care in just one area in Nigeria, highlighting the problems and suggesting possible solutions, with the hope that the lessons learnt will be of benefit elsewhere in Africa. Attention therefore will be focused on Zaria in the Savannah belt of Northern Nigeria.

GENERAL SURVEY

Zaria and its immediate environment has a population of about 200,000. The majority of the people are rural and very poor, the average annual income being only £180 (1). They perpetually face hardships due to defective nutrition, poor environmental hygiene and endemic diseases such as malaria and salmonellosis and yearly epidemics of meningitis (2) and cholera. The vast majority of the people are Hausa and Fulani, but there are others from 120 different ethnic groups, each with its own language and culture. Islam is the dominant religion and women are semisecluded. Until recently, there was no universal primary education. Small scale subsistence and cash crop farming, cattle rearing and trading are the main occupations of the men. In Nigeria as a whole, only £3 per head or 2% of the national budget is available to spend on health needs. Medical services in our hospital are free, and therefore open to all levels of the community.

For various reasons, between 1970 - 1978, the number of deliveries in this hospital increased nearly four fold and it is reckoned that 40% of all the deliveries in the area now take place in this hospital. 85% are spontaneous vaginal deliveries, the Caesarean section rate is 8.8%, forceps 1.5%, assisted breech deliveries 1.6.% and destructive operations 1.4%.

The maternal and perinatal mortality rates are 10 and 90 per 1,000 respectively.

CAUSES OF MATERNAL AND PERINATAL DEATHS

The main pregnancy complications and their contributions towards maternal and perinatal mortality are shown in Table 1.

Obstructed labour is chiefly due to cephalopelvic disproportion, the main underlying cause being contracted pelvis. Poor childhood nutrition, frequent infections and an early start to childbearing, often before growth is completed, result in nearly 25% of our childbearing population being stunted. At maternal ages of less than 16 years, 16-19, 20-24, 25-29, and 30 years or over, the mean heights are 1.52, 1.56, 1.57, 1.57 and 1.57 metres respectively. Malaria is by far the commonest cause of severe anaemia in pregnancy, with nutritional folate deficiency also being important. Iron deficiency is rare and in this area is usually due to chronic blood loss through the genital tract rather than to nutritional deficiency or heavy hookworm infestation. Eclampsia is not always preventable by antenatal care, and its prognosis is worsened by intercurrent bacterial infection and by severe anaemia. The incidence of multiple pregnancy is high at 36 per 1,000.

FACTORS THAT INFLUENCE MATERNAL AND PERINATAL MORTALITY

The obstetric and medical complications give an incomplete picture of the causes of maternal and perinatal death. Far more important were the socio-cultural and biological factors, notably maternal age and parity, nutrition, education and utilisation of antenatal care facilities.

Traditional Practices

As in every part of Africa, there are traditional practices surrounding childbearing. The majority are at best harmless but some are very harmful. Brief mention is made of four cultural practices whose effects are injurious.

"GISHIRI CUT" - This refers to a traditional operation in which old women, nowdays using razor blades, cut the vagina as a means of treating various gynaecological, obstetric and medical

TABLE 1

LEADING OBSTETRIC COMPLICATIONS
IN 12,262 DELIVERIES IN ZARIA

	Prevalence among delivered mothers		Prevalence among Maternal Deaths		Prevalence among Perinatal Deaths	
	Number Affected	%	Number Affected	%	Number Affected	%
Puerperal Infections	842	6.9	57	6.8	-	-
Anaemia in Pregnancy	760	6.1	36	4.7	161	21.2
Disproportion	658	5.4	23	3.5	151	23.5
Prolonged Labour	566	4.6	32	5.7	189	33.4
Pre eclampsia	552	4.5	9	1.6	69	12.5
Retained Placenta	508	4.1	15	2.9	122	24.0
Anaemia in Puerperium	495	4.0	33	6.7	-	-
Multiple Pregnancy	425	3.5	7	1.6	139	16.3
Postpartum Haemorrhage	328	2.7	17	5.2	-	-
Eclampsia	268	2.2	21	7.8	81	30.2
Placenta Praevia	117	0.9	8	6.8	56	47.8
Abruptio Placentae	101	0.8	1	1.0	87	86.1
A.P.H. Other Causes	174	1.4	6	3.4	72	41.3
Uterine Rupture	87	0.7	13	14.9	66	75.9

conditions including prolonged labour. Vesico-vaginal fistula and fatal haemorrhage have resulted from gishiri cuts.

PUERPERAL "HOT BATHS" - The body is bathed or splashed with excessively hot water and the mothers are made to sleep in overheated rooms during the puerperium. This is often complicated by scalds, burns, and peripartal cardiac failure (3). In certain circumstances, such injuries, especially those on the breasts and buttocks, have been followed by gangrene and fulminating septicaemia.

WOMEN EXCLUDED FROM DECISION MAKING - As an example, the decision to take a woman to hospital when she is either desperately ill during pregnancy or obstructed labour is largely left to the husband. In his absence no one may be willing to take responsibility for that decision. The resultant delay in arrival in hospital is one of the main reasons for the high maternal and perinatal mortality figures.

MARRIAGE BEFORE PUBERTY - Most illiterate girls marry before puberty is reached because this traditional Hausa custom is believed to prevent premarital pregnancy and promiscuity. Whatever social benefits early marriage may have, there is no doubt that in Northern Nigeria, this custom has far reaching medico-social consequences. Most girls at this age are stunted with general contraction of the pelvis. This explains why obstructed labour and all its consequences, such as vesico-vaginal and recto-vaginal fistula and obstetric palsy, dominate our gynaecological practice. Eventually, for many of these girls, a stage is reached when they lose all family support and resort to begging and prostitution.

Maternal Age and Parity

Figures 1 and 2 show that in Nigeria, as elsewhere, childbearing is safest when maternal age is between 20 and 29 years, and when parity is between 1 and 3.

Maternal and fetal prognosis were at their worst in early teenage primigravidae and in women of high parity who were 30 years of age or older. These two high risk groups constitute 5% and 12% respectively of the childbearing population, 16% and 24% respectively of the maternal deaths, and 8% and 24% respectively of the perinatal deaths. The chief causes of morbidity and mortality differ in these two high risk groups. These are

Maternal deaths in Zaria (1976/77) - The influence of maternal age and parity
Age < 16 (■), 16-19 (□), 20-29 (●), 30+ (○).

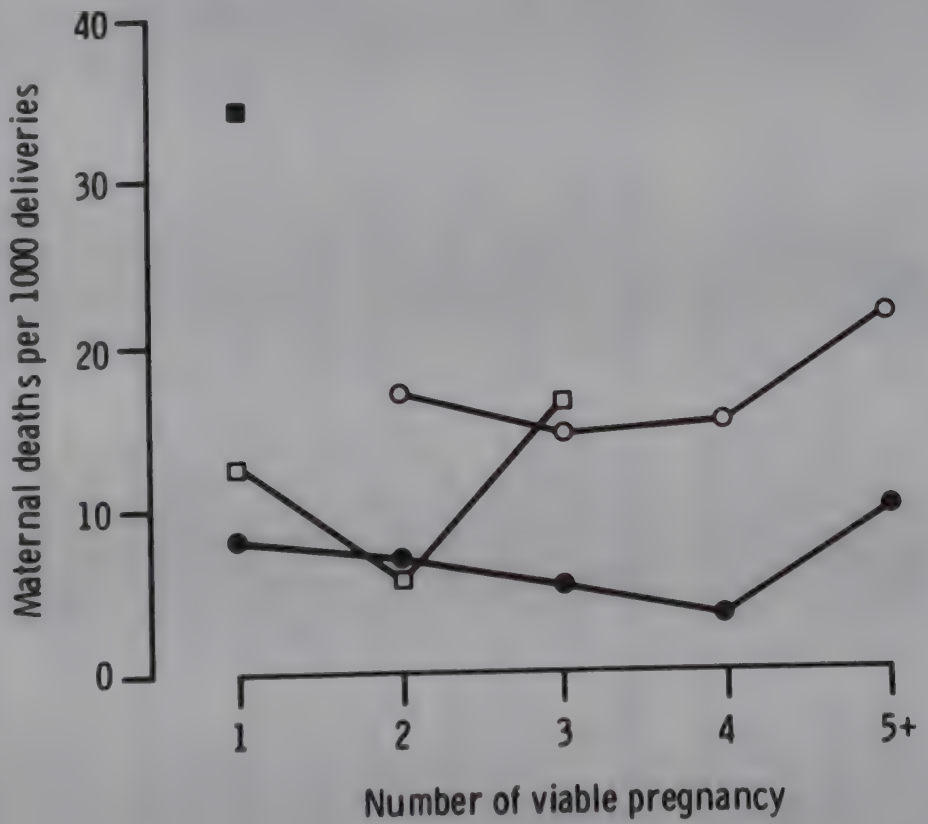
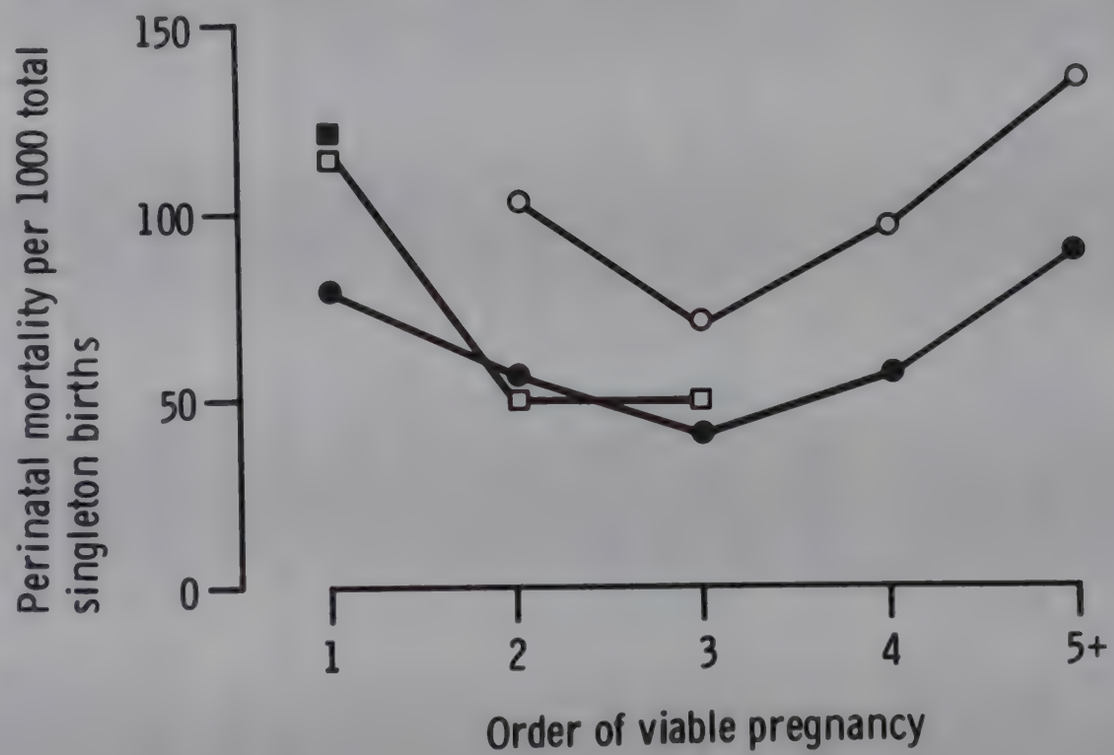


FIGURE 1

FIGURE 2

Perinatal mortality in Zaria (1976/77) - Effect of maternal age and parity
Age < 16 (■), 16-19 (□), 20-29 (●), 30+ (○).



anaemia, cephalopelvic disproportion and eclampsia among the teenage primigravidae and obstetric haemorrhage and uterine rupture in the high parity group.

The prevalence of teenage primigravidae is related to child marriage, which is widespread. High parity is common because family planning is not yet widely accepted and because there is high fetal and infant wastage. An important step towards reducing mortality will be to discourage early teenage marriage, either by legislation or by encouraging formal conventional education. Legislation against early marriage will be difficult to enforce largely because people's traditions and cherished cultural practices cannot be changed overnight. For this and other reasons, formal conventional education is most likely to succeed in reducing earlÿ teenage pregnancy and high parity.

Influence of Antenatal Care

With 1,000 women attending our antenatal clinics each week, gross overcrowding in the presence of acute staff shortages at all levels creates many problems. Because severe haemorrhage, obstructed labour and eclampsia between them account for most of the maternal and perinatal deaths, efforts to prevent them become our priority. Capillary haematocrit and blood pressure levels are regularly determined in all patients, while serological tests for syphilis, haemoglobin genotypes and rhesus factors are determined in selected patients only. Tetanus toxoid is not given during pregnancy. Malarial chemoprophylaxis is stressed more than iron therapy. Antenatal health talks concentrate on persuading people to abandon harmful traditional customs.

Despite its limitations, antenatal care in Zaria was the single most effective means of saving maternal and perinatal lives. It reduced maternal mortality seventeen fold, perinatal mortality six fold, and the prevalence of low birthweight babies by nearly three fold (Table 2).

The most profound effect of antenatal care was the virtual elimination of severe anaemia and the reduction of maternal mortality from obstructed labour, uterine rupture and associated medical diseases (Table 3).

TABLE 2

Influence of Antenatal Care and Education on Results of Childbearing in Zaria 1976 - 1977

	Formal Education	No Formal Education	Antenatal Care	No Antenatal Care
Number of women	776	11,501	8,210	3,973
Maternal Mortality rate/1,000 deliveries	2.5	10.8	1.8	30.8
Perinatal Mortality rate/1,000 total births	18.5	92.8	36.1	202.1
% Low fetal Birthweight in singletons	5.4	13.4	9.0	25.2

TABLE 3

Prevalence of Complications Which Cause Maternal Deaths in Booked and Unbooked Patients in Zaria 1973 - 1976

Complications	% Prevalence	
	Unbooked (156 Cases)	Booked (22 Cases)
Sepsis	31.4	30.4
Severe Anaemia	14.9	1.8
Obstructed Labour) Caesarean Section) Ruptured Uterus)	11.7	4.6
Medical Conditions	9.6	4.1
Retained Placenta	4.4	0
P.E.T./Hypertension	2.0	0
Haemorrhage	13.5	21.4
Eclampsia	6.7	13.2
Anaesthesia	2.6	9.1
Uncertain	1.7	4.5
Surgical Conditions	1.3	1.8
Sickle Cell Disease	0	9.1

It is curious that haemorrhage and eclampsia appear to assume greater importance in maternal deaths among the booked patients. As expected, sepsis was equally important in booked and unbooked patients. The risks of sepsis, which largely depend on poor personal and environmental hygiene in home and hospital, are the same whether the women receive antenatal care or not.

The role of antenatal care in preventive obstetrics is remarkable, but our data should be seen in the context of our prevailing obstetric practice. It could be argued quite correctly that those women who accept antenatal care are self selected, and they may therefore have certain advantages which are not readily apparent. If so, the good results of childbearing, associated with antenatal care could be due to the combined effects of antenatal care and the advantages of self selection. Against this argument at least one point can be made. Malarial chemoprophylaxis and the use of haemathinics as part of antenatal care eliminated severe anaemia as a major cause of maternal and perinatal mortality.

Education and Maternal Health Care

Zaria is a University town, yet, of the delivered mothers, only 7% had received conventional education. Among these, the proportions with primary, secondary and university education were 54, 27 and 19% respectively.

Education was associated with a four fold decrease in maternal mortality, five fold drop in perinatal mortality and nearly three fold decrease in the prevalence of low birthweight babies (Table 2). It is noteworthy that among our educated women both the perinatal mortality rate and the incidence of low birthweight babies compare favourably with some industrial countries. Educated women are at an advantage not only because they have better physique, but because they start childbearing at the safest time, they receive antenatal care and they report early for treatment when things go wrong. Virtually all the educated women received antenatal care whereas only 65% of the illiterate did. Early teenage girls made up 5% and 0.3% respectively of the illiterate and educated groups of women. Each year we see in our gynaecology clinic about 250 patients with obstetric fistula from obstructed labour, and during a period of seven years, only two of these have been educated women.

Low Fetal Birthweight

The magnitude of the problem of low fetal birthweight and its exact role in the high perinatal mortality rate found here is shown in Table 4.

Low birthweight babies made up nearly 14% of all singleton births, 68% of multiple births and nearly half of all perinatal deaths. The perinatal mortality rate among them 241.8 per 1,000, was nearly six times the figure for babies whose birth weight was more than 2.5kg.

The most important causes of low fetal birthweight were maternal anaemia, toxaemia, antepartum haemorrhage and multiple pregnancy. Factors that were commonly associated with low fetal birthweight were early teenage pregnancy, illiteracy, short maternal stature, socio-economic hardship, and non acceptance of antenatal care.

Inflation and Low Fetal Birthweight

In 1977, the combined effects of world-wide inflation, the Sahel drought, and a rapid decline in local food and livestock production brought about the worst period of economic hardship the majority of Nigerians had ever experienced since the civil war of 1967-70. The consumer price index, notably for food items, rose sharply, with the prices of staple foods, vegetables and proteins, being the worst affected. In each of two centres studied (they were about 1,200km apart), the price rises which began between May and June 1977 reached a peak in September and October, and then remained steady or fell slightly for the rest of the year (Figure 3).

Changes in fetal birthweight were also noticed in 1977 but not in our 1976 figures (Figure 4).

The incidence of low fetal birthweight rose very abruptly in August and September to the highest level recorded in 1976 and 1977. This phenomenon suggests some association between economic hardship, especially rising food prices, and fetal growth.

It is impossible to be certain if there was a direct relationship between food intake and fetal birthweight, because food intake was not directly measured and data analysis on birthweights is

TABLE 4

Distribution of Birthweights in All Singleton Births and Among Perinatal Deaths in Zaria 1976

Birthweight Group	Singleton Births		Perinatal Deaths		
	Total Number	% of Total Number	Total Number	% of Total Number	Rate Per 1,000
2.5kg and less	732	13.6	177	48.5	241.8
2.51 - 3.0kg	1,564	29.0	77	21.1	49.2
3.01 - 3.50kg	2,084	38.7	73	20.0	35.0
3.51 - 4.0kg	886	16.5	29	7.9	32.7
4.01kg +	119	2.2	9	2.5	75.6

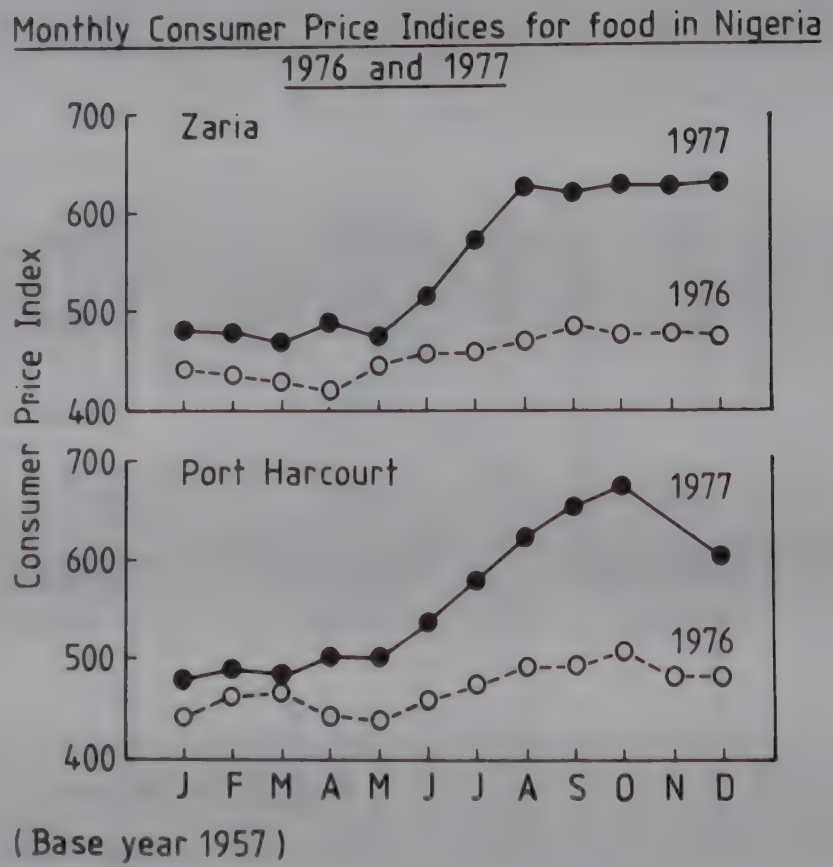

Monthly Consumer Price Indices for food in Nigeria
1976 and 1977
Zaria
1977
1976
Port Harcourt
1977
1976
Consumer Price Index
700
600
500
400
J F M A M J J A S O N D
(Base year 1957)

FIGURE 3

Monthly prevalence of low fetal birthweight in Nigeria

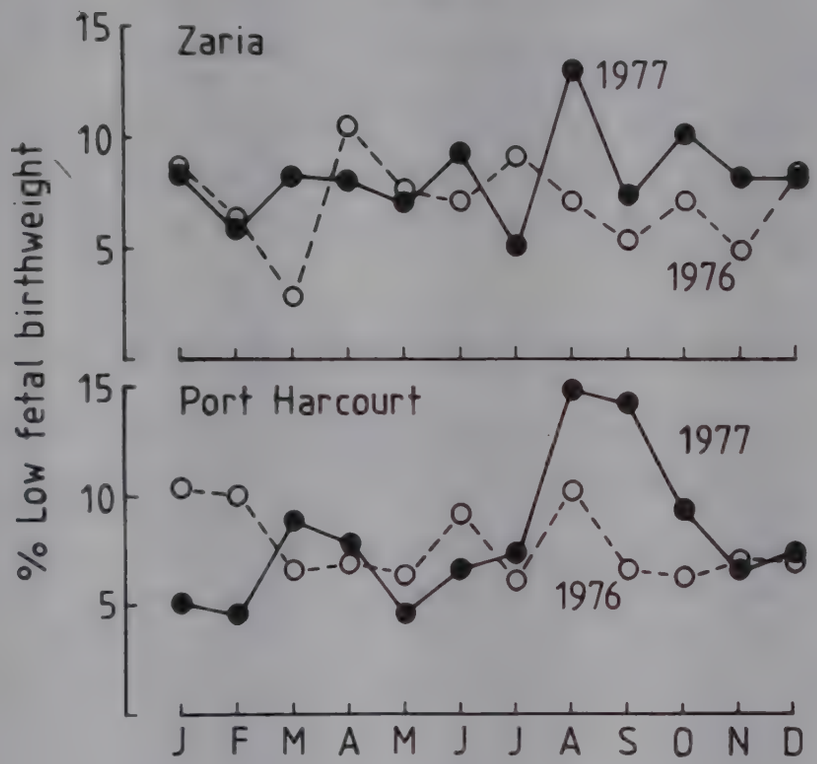


FIGURE 4

still incomplete. However, habits both of food purchasing and comsumption tend to support this supposition. Nigerians in the lower income group (annual earned income less than £1,360) spend 40-50% of their earnings on food, 10% on drinks, 5% on tobacco, 5% on fuel and light, 13% on clothing, 8% on accommodation, 4% on transport, and the rest on other services including the purchase of household goods.

Also, in many societies, it is normal for the wife to prepare her husband's meal, but to eat after him. It is therefore likely that at a time of food shortage, she will eat less than in a time of plenty. In well-nourished populations inflationary trends are unlikely to affect birthweight. However, in the sub-optimally nourished population of Nigeria and elsewhere in Africa, the effect of a short period of uncontrolled inflation and acute food scarcity may cause serious harm to both pregnant women and their babies.

Delay in the Use of Available Maternity Services

Many women are reluctant to seek expert medical care early. The resulting delay has several important effects. Starting with maternal deaths, far too many occur before correct treatment in hospital has had time to take effect. In Zaria, 10% of the deaths take place within the first hour of admission, 60% between 1-24 hours, 23% from 1-7 days, and only 7% occur later than one week after admission. In most cases, the death of a pregnant woman can be attributed to two or more causes or complications, creating problems with data analysis of maternal and perinatal deaths. Another result of late arrival in hospital of desperately ill women is the enormous demand made on our blood transfusion services. The requirement for stored blood in Zaria is 60 units per bed per year compared with only 8 units per bed per year in the United Kingdom. Most women with obstetric haemorrhage are first seen when they are already exsanguinated and others require transfusion for severe anaemia which would, if recognized earlier, have responded to haematinics and antimalarials. With regard to perinatal mortality, examination of the time and place of fetal deaths in Zaria shows that nearly half of the documented perinatal deaths took place before the mothers' arrival in hospital (Table 5).

When searching for the reasons for delay in arrival in hospital, an obvious answer is the accessibility of the patient's home.

TABLE 5

Perinatal Mortality in Zaria - 1977

Effect of Fetal Birthweight and Time and Place of Delivery

	Birthweight Less than 2.50kg.		Birthweight 2.50kg +		All	
	Number	(%)	Number	(%)	Number	(%)
Total Number of Singletons	842		5,128		5,970	
Total Perinatal Deaths	212	(41.1)	304	(58.9)	516	(100)
Born Before Arrival	3	(0.6)	3	(0.6)	6	(1.2)
Stillbirth - Intra-uterine Death before admission	84	(16.3)	150	(29.0)	234	(45.3)
Stillbirth - Intra-uterine Death after admission	28	(5.4)	52	(10.1)	80	(15.5)
Early Neonatal Death	97	(18.8)	99	(19.2)	196	(38.0)
Perinatal Mortality rate/1,000	251.8		59.3		*86.4	

* Among Singletons with known birthweights.

It might be expected, therefore, that those who died as a result of delay in reaching hospital, did so because they had poor access to good roads. Table 6, however, shows that the facts were otherwise.

TABLE 6

Maternal Deaths in Zaria 1973 - 1976:
The Effect of Road Communication

Distance from Homes to Hospital	Number of Women Who Died	% of Dead Women with Access to Good Roads
0 - 20 Km	81	96
20 - 50 Km	32	94
50 - 80 Km	29	97
80 - 176 Km	23	70

All patients who died between 1973 and 1976 were divided into 4 groups depending on the distances between their homes and the hospital. All those whose homes were within 2km from an "all season" road were considered to have access to good roads. Within a radius of 80km from Zaria, 94-97% of those who died had access to good roads, yet they failed to report early enough to receive effective treatment. Further analysis has also shown that there is no significant correlation between the rapidity of death in hospital and the distance travelled from home by the dying patient. Thus while poor communications with scarcity of effective means of transport may have contributed to some of the deaths, reliance on traditional medicine or deferment of the decision to seek hospital care are more important causes of maternal and also perinatal death.

COMMENT

The current situation with its high maternal and perinatal morbidity and mortality can no longer be accepted. Progress demands improvement at three levels; firstly the health team, secondly the government and finally and most importantly, the general public. The medical team has a responsibility at each of these levels. It should itself give efficient service, collect accurate information and publicise the facts. At government level, its responsibility is to ensure that government policies will bring about realistic improvement not only in health, but more importantly in socio-economic conditions. Emphasis should be placed on the achievement of functional literacy, on improving both food production and supply to the whole community and on other appropriate measures to lessen economic hardship in that particular society. The health team's responsibility to the people is to encourage the development of awareness of their own need.

Regarding other measures to reduce maternal and perinatal mortality, our data confirms the well known fact that acceptance and utilisation of antenatal care by whole communities will make the strongest impact in this area. Whether we set out to achieve this objective by using traditional village midwives or by maternity villages or by other systems now in vogue, what really matters is "good organisation and proper communication between all those concerned in maternity care" (4) so that the community being served will have confidence in the system.

References

1. Grove, N. Natl Geogr 1979; 155: 413
2. Whittle, H.C. and Greenwood, B.M. Trop Doct 1976; 6: 99
3. Davidson, N. McD. and Parry, E.H.O. Q J Med 1978; 47: 431
4. Br Med J 1974; 2: 682: Editorial

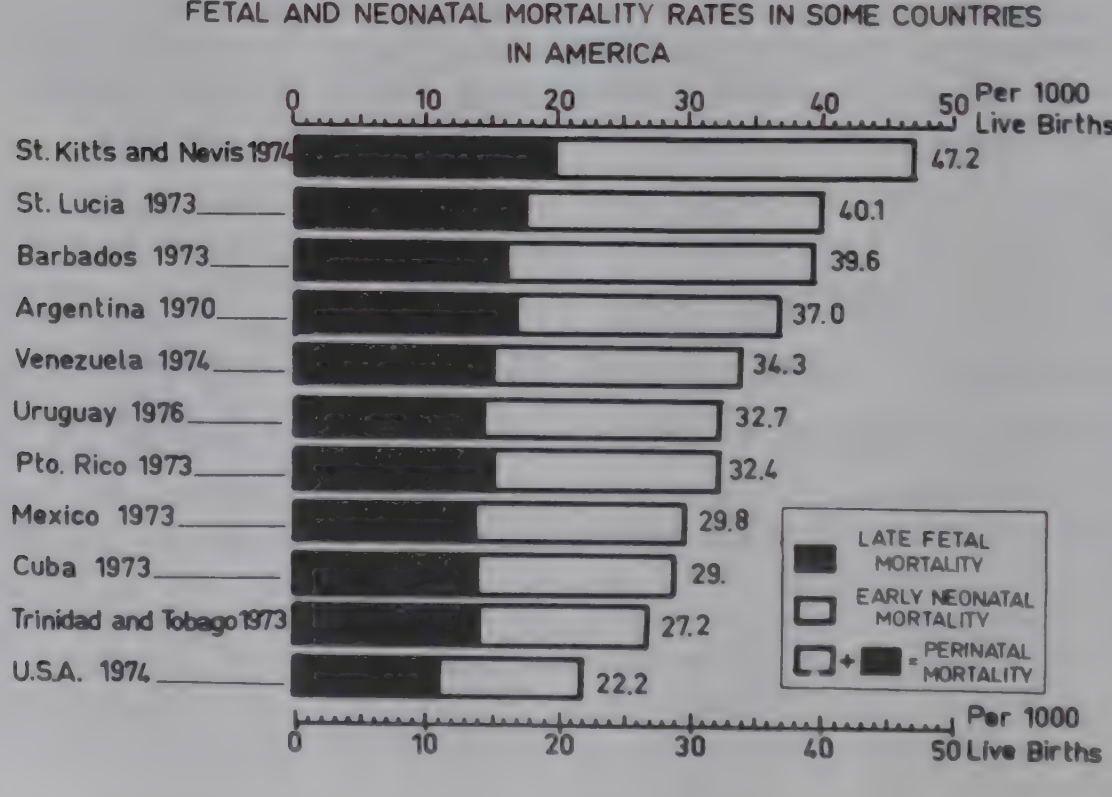
APPROACHES TO REDUCING MATERNAL AND PERINATAL MORTALITY IN LATIN AMERICA

Professor R. Caldeyro-Barcia

Maternal and perinatal mortality in Latin America are significantly higher than in Europe, the United States, Canada, Australia, New Zealand and Japan. One very important cause for this difference is the lower social, economic and educational status of large masses of the population in Latin America, which are also deprived of adequate nutrition, potable water, health services and sanitation.

National official vital statistics in Latin America may not be very accurate mainly because of under-registration of perinatal deaths. However, they illustrate the difference in perinatal mortality between some Latin American and Caribbean countries, and the United States, Canada and Europe (Figure 1) (1).

FIGURE 1



Data obtained from World Health Organization, World Health Statistics Annual, Vol. 1, Geneve, 1977 (1).

In a prospective study on perinatal mortality sponsored by the World Health Organization (2), the eight participating countries used the same definitions and very similar methods for collecting data during 1973 (Table 1). The perinatal mortality rate in Cuba, which is among the lowest in Latin America, is much higher than that from all other countries of this Study (with the exception of Hungary).

TABLE 1

PERINATAL MORTALITY IN SELECTED COUNTRIES (1973)

	Live Births	Mortality rates per 1,000 total births		
		Late Fetal	Early Neonatal	Perinatal
Austria	49,590	8.41	15.31	23.72
Cuba	233,765	13.77	15.33	29.10
England & Wales	675,951	11.74	9.39	21.13
Hungary	156,224	8.88	23.72	32.60
Japan	209,023	12.32	5.93	18.25
New Zealand	60,727	9.87	8.85	18.72
Sweden	109,660	7.09	7.13	14.24
USA (6 States)	146,262	7.12	9.13	16.25

From the World Health Organization on an International Comparative Study (2).

In an ongoing prospective study coordinated by our Centre, made in several University Maternity Hospitals of different Latin American countries, the following mortality rates have been obtained between 1976 and 1979 (Table 2).

TABLE 2

PERINATAL MORTALITY RATES IN MATERNITY HOSPITALS OF LATIN AMERICA

	Total number of births	Mortality rates per 1,000 births		
		Late Fetal	Early Neonatal	Perinatal
Hosp. Sardá Buenos Aires Argentina Jul. 1976-Dec. 78	9,758	15.3	10.5	25.8
Hospital Escuela Paysandú, Uruguay Dec. 1976-Nov. 77	1,934	13	20	33
Maternidad Aramayo La Paz, Bolivia Jan. 1977-Dec. 77	3,241	44	30	74
Hosp. Las Higueras Concepción, Chile Jan. 1979-Dec. 79	5,598*	16	13	29
Mat. Cachoeirinha Sao Paulo, Brasil Dec. 1978-Nov. 79	4,294	21	11	32
Hospital Alcalá Cumaná Venezuela May 1978-Sept. 79	10,316	15.5	12.2	27.7

* Excluding malformations

Data obtained from Schwarcz, R. et al., 1979 (3).

Although there are marked differences between institutions in Table 2, the perinatal mortality rates and the incidence of low birthweight are higher than those reported by University Maternity Hospitals from the United States, Canada, Europe, Japan and New Zealand for the same period (Table 3).

TABLE 3

PERINATAL MORTALITY IN MATERNITY HOSPITALS OF CANADA AND EUROPE

	Number of births	Mortality rates per 1,000 births		
		Late Fetal	Early Neonatal	Perinatal
Royal Victoria Hospital Montreal, Canada 1971-75 (4)	11,782	5.9	3.7	9.6
Giudad Sanitaria "Enrique Sotomayor" Bilbao, Spain 1974 (5)	3,826	10.98	12.03	23.01
Hospital Clínico "San Carlos" Madrid, Spain 1973 (6)	4,358	10.78	7.56	18.34
Obstetrical Departments of Hospitals of the Assistance Publique Paris, France 1973 (7)	5,918*	9.8	8.1	17.9*
	904**	14.4	19.0	33.2**

* Married mothers

** Unmarried mothers

Maternal mortality is markedly higher in Latin America, as shown in Table 4.

TABLE 4

MATERNAL MORTALITY IN 20 SELECTED COUNTRIES

(per 10,000 live births)

Country	Year 1965
Sweden	1.13
Denmark	1.92
Netherlands	2.04
Norway	2.54
England and Wales	2.62
Belgium	2.72
Ireland	2.89
United States of America	2.91
Czechoslovakia	2.92
Australia	2.96
Finland	3.09
France	3.10
Poland	3.26
Canada	3.48
New Zealand	3.66
Switzerland	4.10
Venezuela	11.74
Brasil (state of Sao Paulo)	12.08
Mexico	15.18
Colombia	24.03
Ecuador	24.73
Chile	27.18

Data obtained from (8, 9)

The above reported data have motivated the Pan American Health Organization to increase the activities leading to improve perinatal health care within a more comprehensive programme of Maternal Child Health care. The guidelines of the programme are presented in the following sections of this paper (10,11).

Objectives

Increase the "adequate" coverage and improve the quality of perinatal and maternal child health (PN & MCH) care in order to provide better health care to more families.

Specific goals should be set for the coverage increase and to improve the quality of care after the assessment of the present situation and according to the available resources and the possibilities of their appropriate organisation.

Assessment of the Present Situation in the Selected Areas (before starting intervention)

a) Analysis of already available data on PN & MCH care.

b) Observation of the organisation and technologies employed in the area for perinatal care.

c) Preparation of an inventory of the human and instrumental resources available in the area for PN & MCH care.

d) Perform a systematic collection of data on simple precoded forms for all the births occurring during 12 months in the whole study area. These data will be employed to:-

   (i) Obtain the indispensable PN & MCH vital statistics and related information.
   (ii) Evaluation of the technologies employed for:-
   - The Care of PN & MCH;
   - The recording, storing, retrieving and processing of PN & MCH data;
   - The education for health of mothers, fathers, families and communities;
   - The continuous training of health personnel.
   (iii) Estimation of the coverage of prenatal, perinatal, neonatal, infant and child health care.
   (iv) Evaluation of the quality of PN & MCH care.
   (v) Detection of the most important PN & MCH care problems of the area.
   (vi) Identification of the basic needs of the area for improving PN & MCH care.

Development of Appropriate Technology for Comprehensive PN & MCH Care

Technology is the practical application of scientific knowledge. In this programme, technology has a comprehensive meaning including all the activities contributing to the improvement of PN & MCH care.

The following aspects should be taken into account in the development of appropriate technologies for PN & MCH care.

1) Some basic principles of perinatal primary health care.
2) Preparation of guidelines for appropriate delivery of PN & MCH care.
3) Service activities in PN & MCH care.
4) Organisation of health resources for PN & MCH care.
5) System of information for PN & MCH care.
6) Education for PN & MCH care.
7) Community participation in primary health care.
8) Continuous evaluation of the programme of PN & MCH care and of its main components.

Each of these topics is summarised in the following paragraphs.

SOME BASIC PRINCIPLES OF PERINATAL PRIMARY HEALTH CARE

Psychological Aspects of Humanised Perinatal Health Care

a) The Education, Training and Psychoprophylaxis of Mother and Father - Before and during gestation, the mother and father are educated about the events that will occur in pregnancy, labour, delivery and after the birth of the child. They are trained in the active participation they should have in these stages of parenthood.

By means of appropriate education and psychoprophylaxis, fear of labour disappears and is replaced with the feeling of happiness inherent to motherhood. The normal pregnant or parturient woman is not considered as a "patient" but as a mother, i.e. a healthy woman having a child. She has special physiological, psychological, affective and social needs which should be properly fulfilled.

Normal labour in "low risk" pregnancies is not regarded as a medico-surgical procedure in which medication is routinely administered and surgical manoeuvres are performed. Normal childbirth is considered as a physiological and natural episode of life, which should be a source of happiness for the family.

The mother and father should become familiar with the environment where childbirth will occur and with the person(s) who will be in charge of the attention of labour (who should be fully trusted by the parents).

b) Family Centred Childbirth - The active and informed participation of the mother and father during labour and the care of the newly born. The fully conscious mother is the protagonist of labour. The father provides her with emotional, psychological and physical support.

The active participation of the father in labour and childbirth induces his emotional involvement. The sharing of this event with the mother markedly strengthens the loving links between them. The participation of the father (and of other relatives selected by the mother) greatly contributes to relieving the pain and anxiety which she may feel in a less humanised environment and to improve her wellbeing during labour. The father becomes a primary health worker.

c) Early Start of Parent-Infant Bonding - During pregnancy, mother and father are educated to start early the natural interaction with the newly born baby. Within a few minutes after birth the normal baby is given to the mother who holds it in her arms and starts breastfeeding it as soon as possible. The vigorous neonate does not need the oropharyngeal suction which is routinely performed (12). The fully awake mother will caress the baby and speak to it. The normal, well oxygenated, non acidotic and not narcotized baby will soon respond, looking at the mother's face, listening to her voice, moving its head and eyes to look to the eyes of its mother (13). It will soon start sucking the maternal breast, triggering the release of oxytocin and prolactin in the mother.

The early start of interaction between mother and child has a primary role in the creation of an "affective bonding" between them, which will greatly facilitate the normal maternal behaviour and the loving response of the child (13).

The father should also participate in the early interaction with the baby which greatly helps in awakening paternal love and sustained affection for his child.

d) Rooming-in - In the following hours and days the mother will keep the normal baby close to her (rooming-in). She will breastfeed it "at demand". She will take care of the baby's health supervised by a nurse. The interaction of the baby with the father will continue and that with the siblings will start as soon as possible.

e) Promotion of Breastfeeding - The previously described management of labour, childbirth and of the newly born, contributes to promote breastfeeding as the only source of nutrition for the first trimester. Breastfeeding supplies the best nutrition for a normal growth; the early start of breastfeeding provides the baby with antibodies and immunocompetent cells (present in the collostrum) which will protect it against infections.

Avoid Iatrogenia in the Care of Labour

a) Labour Surveillance Without Unnecessary Interferences - At least one member of the perinatal team should be present, keeping a close, continuous surveillance to insure that the health condition of mother and father are good and that labour is making normal progress. The best available methods should be employed for this surveillance avoiding interference with maternal wellbeing and the family-like environment. Electronic monitoring for recording uterine contractions and fetal heart rate requires personnel adequately trained for the obtaining and interpretation of the records.

If all maternal and fetal functions are normal and labour is making satisfactory progress, the perinatal team should not interfere with the normal physiology of childbirth; the routine use of unnecessary medication and manoeuvers (see below) should be avoided.

b) Justified Intervention in Abnormal Labour - The members of the perinatal team (obstetrician, nurse, midwife, neonatologist, etc.) should actively intervene only to prevent or manage labour complications, which occur in less than 20% of all labours. The appropriate medication should be given: oxytocin, toclytics, sedatives, ansiolytics, analgesics, anaesthesia, oxygen etc.

The appropriate manoeuvre should be performed: artificial rupture of membranes, episiotomy, forceps or vacuum extraction, Caesarean section etc. The medication and manoeuvres employed depend on the type of labour complication. In abnormal labour, the measurement of pO_2 and acid base balance of fetal blood may be very useful before performing any intervention.

Position of the Parturient Woman

a) The Vertical Positions and the Freedom to Move in the First Stage of Labour - In humanised labour the mother should be free to select the position in which she feels more comfortable during labour, and to change her position whenever she likes to do so. During the first stage of normal labour, the majority of mothers prefer to be sitting, standing or walking, i.e. with the trunk almost vertical, and to move freely changing from one vertical position to another (14,15,16). Very few choose to be lying in bed all the time, although some would lie horizontally for short periods.

The vertical positions and the freedom to move greatly relieve the discomfort or pain, particularly that felt in the lumbo-sacral area.

b) Influence of Maternal Position on Uterine Contraction - The record of intra-uterine pressure shows that uterine contractions have a greater intensity when the mother is in a vertical position than when she is in the supine position. Their efficiency for dilating the uterine cervix is also greater in the vertical position. These beneficial effects of the vertical position are more significant before cervical dilatation has reached 7 or 8cm (17).

c) Influence of Maternal Position on the Duration of the First Stage of Labour - If all other factors are matched, the duration of the first stage of labour is significantly shorter when the mothers were all the time in a vertical position (sitting, standing or walking), than when they remained lying in bed.

This conclusion is based on a prospective study coordinated by our Centre and performed in cooperation with eleven Latin American hospitals in 324 "low risk labours" (14).

d) Sitting on an Adjustable Obstetrical Chair in the Second Stage of Labour - The large majority of mothers feel much more comfortable sitting in an obstetrical chair such as that employed

in our Centre than lying in the lithotomy position usually employed in most hospitals during the second stage of labour (18,19,20,21, 22). The relative position of the several parts of the obstetric chair (backrest, seat, feet holders and hand grips) can be adjusted to fit the most comfortable position for each mother in the second stage (23,24).

Usually the backrest is set at an angle of 15 to 25 degrees with the vertical plane; the seat is at a 15 to 20 degrees angle with the horizontal plane. The preferred angle between the backrest and the seat is 105-120 degrees. The thighs are flexed on the pelvis and abducted and the knees are free (25).

Natural Expulsive Efforts

Mothers are instructed to perform spontaneously the expulsive efforts, i.e. whenever they felt the urge to "push" (23,25). The timing and the number of efforts per uterine contraction, as well as the duration and the force of the efforts are self regulated by the mother. They do not receive the usual instructions to perform long-lasting and strong expulsive efforts. They are not taught to close the glottis during the efforts in order to avoid the rise of intrathoracic pressure (Valsalva manoeuvre) with the resulting disturbances in blood circulation.

In this way, it is intended that the expulsive efforts would be natural and have a physiological pattern, which has been recently described (23,25).

Fetal Oxygenation and Acid Base Balance at Birth

The fetal blood is obtained from the umbilical vessels which are clamped at birth. In labour managed naturally, according to the principles described above, it was found that the average values of pO_2 and pH were much higher (and those of pCO_2 and Base Deficit were much lower) than the values reported for low risk pregnancies in normal labours managed with the technologies usually employed in most Maternity Hospitals in developed countries (23,25,26).

PREPARATION OF GUIDELINES FOR APPROPRIATE DELIVERY OF PN & MCH CARE

At the Primary Health Level - These guidelines should be prepared for the preconceptional and gestational periods, the first, second and third stages of labour, for the newly born and the puerperium, the infant and the child.

Guidelines for Referral - These guidelines are applied for referral to more complex levels of care of high risk cases or of those having actual complications. The guidelines should be prepared for pregnancy, labour, the newly born, the puerperium, the infant and the child.

These guidelines combined with the regionalisation of health services would provide the rational basis for the integration at the three levels of care and increase the efficacy of the whole system of PN & MCH care.

SERVICE ACTIVITIES IN PN & MCH CARE

These Service Activities Should be Organised for:-

- Control of pregnant women and their fetuses.
- Care of labour (mother and fetus), the post-partum woman and newly born.
- Control of neonates up to 28 days and puerperal women.
- Control of the infant and mother in the post-neonatal period.
- Control of the child from the second until the sixth year of life.

The above mentioned activites of control include:-

- Supervision of growth and development of the fetus, neonate and child.
- Care of morbid processes of the mother, fetus, neonate and child.
- Promotion of mental health and buccal health of the family.
- Adequate nutrition of pregnant and lactating mother, promotion of breast feeding and appropriate child nutrition during the weaning period.
- Vaccination of pregnant women against tetanus (and Rh factor when indicated), of the neonate with BCG, of the infant against tetanus, diphtheria, pertussis, polio and measles.

ORGANISATION OF HEALTH RESOURCES FOR PN & MCH CARE

Regionalisation of Services

It will be organised based on the strategy of the "risk approach".

a) Levels of Care - PN & MCH care may be organised at three levels, primary, secondary and tertiary; patients should be

referred to each level according to the estimated risk of the mother, fetus, newly born baby, infant or child.

In Latin America, employing appropriate technology, PN & MCH (primary health) care can be delivered by properly trained primary health workers. This makes possible the coverage increase to a high percentage of the target population.

b) The Geographical Regionalisation - The geographical regionalisation facilitates the easy access of each mother and child to the health workers (or viceversa). It also makes possible the rapid referral from primary to secondary or tertiary levels when more complex care is needed. It makes possible the best utilisation of the available human and material resources in the area.

c) Reallocation of Roles and Responsibilities Among Health Personnel - Primary perinatal care should be assigned to primary health workers. The trained mother will always be an indispensable health worker, particularly during pregnancy and labour, and for the care of the newly born and child. Other primary health workers will depend on local availability of human resources. The role may be assigned to a trained empirical midwife, an auxiliary nurse, a graduate midwife or a nurse and very seldom to a medical doctor. Secondary level of care should be provided by medical doctors (general practitioner, obstetrician, paediatrician). Tertiary care level must be in the hands of well trained perinatologists, obstetricians and paediatricians.

d) Continuous Supervision of the Health Work Accomplished by Health Personnel - This supervision will be scheduled in order to have a periodic flow of information of the activities performed by the health personnel. Each level of personnel will directly supervise the activities of the subordinate health workers, including empirical midwives. Some of the objectives of the supervision are:-

- To know whether each level of the health team is accomplishing the work assigned;
- To find out the problems faced by the local personnel and to cooperate in their solution;
- To facilitate the timely revision of the appropriateness of technologies when necessary;
- To increase the motivation of the local health personnel and of the community.

SYSTEM FOR PN & MCH INFORMATION

The core of this system is the data processing unit provided with a minicomputer and the corresponding personnel. The input to this system would be the data written on precoded forms which should be obtained at the controls made during pregnancy, labour, post-partum, the puerperium, the neonatal, post-neonatal and childhood periods. All the data from one given mother, fetus, newly born and child should be linked with a single identification number. The output should include: the service activities accomplished, the fulfillment of the guidelines for PN & MCH care, according to the organisation or resources already described and health indicators such as maternal, fetal, neonatal and perinatal mortality and morbidity rates, low birth-weight rate, neonatal depression rate, causes of fetal neonatal and maternal death, etc.

The data produced by the system for information on family health will be most useful for the evaluation of the project and for periodic reprogramming of the activities. In addition, the system will evaluate the activities for health education and will be employed for the retrieval of the resources for education in family health such as teaching materials and bibliography.

EDUCATION FOR FAMILY HEALTH

The educational component is of primary importance in any programme for family health.

Target Groups

The educational programme should be addressed to:-

1) the health personnel involved in this project;
2) the mothers, fathers, and other members of the family;
3) the community.

1) The Health Personnel - The health personnel involved in family health includes general practitioners, rural doctors, obstetricians, paediatricians, perinatologists, neonatologists, public health officers (especially those involved in immunisation), dentists, psychiatrists, psychologists, nutritionists, dietitians, graduate midwives, nurse-midwives, nurses, social workers, auxiliary nurses, clerks, cleaning personnel, empirical midwives and other primary health workers.

Continuing training programmes should be conducted on an ongoing basis addressed to all levels of health personnel involved in PN & MCH care. In addition to the cognitive and sensory-motor components of education, one very important element is an attitudinal change, namely, the satisfaction to be gained by the health personnel while assisting the healthy gestation and birth of a new member of the family and its normal growth and development.

The continuous training and education should keep the health personnel updated on new knowledge and on the reallocation of roles and responsibilities within health personnel. Improved quality of PN & MCH care and increased coverage are among the results expected from this activity.

2) The Family - Mothers, fathers and other members of the family should be educated to actively participate as primary health workers in PN & MCH care; this role is particularly relevant for the mother. The family should be educated on childbearing, childrearing and family health care.

The controls during pregnancy and in the early puerperium are a most suitable occasion for the education of mothers and fathers. The education should continue at the controls made during the neonatal, puerperal and post-neonatal periods and further on.

3) The Community - Information and education of the community should be made through all available channels and methods, employing all the pertinent resources to obtain the maximum participation of the community in the detection of problems and in their solution.

For this purpose, the community should receive adequate information about the PN & MCH care programmes. The objectives, contents and implementation of health education programmes for the community should be adapted to the local needs, conditions and traditions.

COMMUNITY PARTICIPATION

The active and informed participation of the community is an indispensable ingredient for the success of a programme on PN & MCH care. The information and education of the community summarised in the preceding paragraph, should motivate the community to detect the main items in which its participation will be more necessary and efficient.

Some of the first results to be expected from the participation of the community, are the promotion of increased coverage and of early start and periodic continuation of controls, of timely immunisation, of adequate nutrition and breastfeeding, of buccal health and mental health.

The community should be made aware of its responsibility and capability towards ensuring a healthy outcome for the mother and child, and an adequate family health.

The problems posed to the community should be manageable by the community in order to promote its self-reliance.

EVALUATION

The evaluation of the project will be facilitated by the system for health information. This system will continuously receive data about the service activities accomplished and of the health condition of the families under control. Periodically this data bank will supply indicators which will be employed for the evaluation of different aspects of the programme.

The Appropriateness of the Technologies

PN & MCH care described earlier in the guidelines will be evaluated by the following indicators:-

1) Effectiveness.
2) Replicability.
3) Sensitivity.
4) Specificity.
5) Cost.
6) Efficiency.
7) Implementation in the field by primary health personnel of the project area.
8) Acceptance by the consumers and by local health personnel.
9) Contribution to increase coverage to improve the quality of PN & MCH care.
10) Relevance to solve local problems in PN & MCH care.

Evaluation of Increased Coverage

For the evaluation of the progress made in this aspect, the degree of accomplishment of the goals set for each year of the project is an adequate frame of reference. For a given year, the increased

coverage can be evaluated by indicators of the following type:-

$$\frac{\text{Number of pregnant women receiving "adequate" care}}{\text{Number of pregnant women programmed to receive care}}$$

Whether care is "adequate" will be determined by some of the indicators listed in the following paragraphs.

Evaluation of the Quality of Care

One approach to this problem is to evaluate the controls made during pregnancy, labour, post-partum, neonatal and puerperal periods. At each control, the care should be provided to both the mother and her fetus or neonate. A second approach is to evaluate the actions generated by the findings obtained in the control.

Evaluation of the Controls

Number of controls per birth:

$$\frac{\text{Number of prenatal controls accomplished per birth}}{\text{Number of prenatal controls programmed per birth}}$$

Early onset of controls:

$$\frac{\text{Number of early controls accomplished}}{\text{Number of early controls programmed}}$$

Timing of controls:

$$\frac{\text{Number of controls made according to schedule}}{\text{Total number of controls made}}$$

Quality of controls:

This can be evaluated by the ratio between the number of relevant data (e.g. blood pressure) which were actually obtained at any given control and the number of such data which were planned to be obtained.

Evaluation of the Actions Generated by Abnormal Findings in a Control

Finding abnormal signs in a control should generate actions to correct the anomaly at the primary health level or to refer the patient to the secondary level.

These actions should be pre-established in the guidelines and in more detail in the standard of procedures. The appropriateness

of these technologies is very relevant for the quality of care; the indicators for their evaluation have already been listed.

Evaluation of Referrals

A false positive is a patient who is referred to a secondary level of care and who does not need such referral. The technology employed in such cases has a very high sensitivity and a low specificity. The lower the percentage of false positives the better the appropriateness of the technology employed for referrals. A similar reasoning can be applied to the false negatives (patients who should have been referred and were not referred).

Evaluation of the System for Information on PN & MCH Care
Obtaining and Recording of Data

Data will be obtained from mother and fetus - newly born at the controls made during pregnancy, labour, post-partum, neonatal and puerperal period. The adequacy of forms to be filled at these controls will be evaluated. The forms should be designed to obtain all relevant data. They should be easily filled. They should be useful for the present and future management of the mothers, fetus, and neonate. Each of these aspects will be evaluated. One indicator to evaluate their implementation by the local health workers is

$$\frac{\text{Number of data actually filled}}{\text{Number of data to be filled in the form}}$$

Another indicator is the consistency between data on the same form.

Storage and Retrieval of Data

In the system proposed with data stored in the magnetic tape-memory of the minicomputer, the retrieval of data should be easy and rapid. Other systems, more simple and less expensive than the minicomputer will be developed for storage and retrieval of data. Their appropriateness will be evaluated by the time consumed by local personnel to retrieve a given set of data.

Data Processing

The system should be able to provide several types of indicators which will be employed for the evaluation of the programme. Some of these indicators have been already mentioned. Other indicators are vital statistics such as maternal, fetal, neonatal and perinatal mortality rate and morbidity rate. Intermediate health indicators such as rates for low birthweight, preterm births, depressed neonates and others, should also be routinely provided.

Evaluation of Education for PN & MCH

This evaluation will be made according to the technology employed at the Latin American Centre for Technology in Health Education (CLATES). A comparison will be made between the results of the survey made before the onset of each educational programme, periodically during the development of the programme, and at the end of the programme.

The following indicators will be employed:-

1) Effectiveness (for cognitive, psychomotor and attitudinal components).
2) Cost.
3) Efficiency.

Evaluation of the Whole Project

The ultimate goal, namely "Better health for more families", can be measured by the health impact of the programme which may be evaluated by the changes in health indicators such as those mentioned below.

- Maternal, fetal, neonatal and perinatal mortality rates.
- Rates for low birthweight, preterm birth, intra-uterine growth retardation, maternal infections, respiratory distress in the neonate, neonatal sepsis, neonatal jaundice, neonatal anaemias, neonatal hypothermia, suckling disturbances, neonatal tremours or convulsions, abnormalities in the neurological exam of the neonates, incidence of certain congenital malformations.

References

1. World Health Organization. World Health Statistics Annual. Vol 1 Geneve, 1977.

2. World Health Organization. Social and biological effects on perinatal mortality. Vol 1, Report on an International Comparative Study sponsored by the World Health Organization, 1978; p.202.

3. Schwarcz, R.; Diaz, A.G.; Fescina, R.; Belitzky, R.; Burjel, L.; Capurro, H.; Diaz Rossello, J.L.; Martell, M.; Nieto, F. and Tenzer, S. Antenatal management of premature labour. Proc IX World Congress Gynecology and Obstetrics, Tokyo, Japan, Oct. 1979, Excerpta Medica (in Press).

4. Usher, R. Changing mortality rates with perinatal intensive care and regionalisation. Seminars in Perinatology 1977; 1: 309-319.

5. Aranguren Duo, G.; Gandara Ibarra, A.; Anza Ugarte, I. and Rodriguez-Escudero, F.J. Reducciónde la morbimortalidad perinatal. II. Experiencia con un nuevo diseño para la asistencia en paritorio. Clin Invest Gin Obst 1975; 2: 315-318.

6. Arizcun Pineda, J. and Alonso Ortiz, T. Análisis crítico de las causas de mortalidad perinatal en el bienio 1972-73. Comparación con el bienio 1970-71. Acta Ginecológica, 1975; 26: 201-223.

7. Rumeau-Rouquette, C.; Kaminski, M. and Goujard, J. Prediction of perinatal mortality in early pregnancy. J Perinat Med 1974; 2: 196-207.

8. Instituto de Saude. Mortalidade materna e na infancia no Estado de Sao Paulo de 1960 a 1970. Publ No 24, Governo do Estado de Sao Paulo, Secretaria de Estado da Saúde, Sao Paulo, 1975.

9. Ministerio de Salud Publica, División Nacional de Planificación, República del Ecuador. Mortalidad Materna en el Ecuador, 1961 a 1972, Quito, Ecuador, Oct 1975.

10. Caldeyro-Barcia, R. Research action programme on development, implementation and evaluation of appropriate technologies for perinatal care, with emphasis on primary health care in rural areas. Proposal submitted to the World Health Organization, Feb 1979, CLAP Publication No 809.

11. Caldeyro-Barcia, R.; Giussi, G.; Capurro, H.; Bustos, R.; Osorio, A.; Benedetti, W.; Tenzer, S.; Cuadro, J. and López de Montero, M. Programa de atención perinatal y materno-infantil con énfasis en la atención primaria de salud (para los Departamentos de Cerro Largo y Treinta y Tres, República O. del Uruguay). CLAP, OPS/OMS, Publicación No 819, 1979.

12. Bustos, R. Personal communication.

13. Klaus, M.H. and Kennell, J.H. Maternal-infant bonding. The C.V. Mosby Company, St. Louis, USA, 1976.

14. Diaz, A.G.; Schwarcz, R.; Fescina, R. and Caldeyro-Barcia, R. Efectos de la posición vertical materna sobre la evolución del parto. Clin Invest Gin Obst (Barcelona, España) 1978; 5: 101.

15. Flynn, A.M.; Kelly, J.; Hollins, G. and Lynch, P.F. Ambulation in labour. Brit Med J 1978; 2: 591-593.

16. Mendez-Bauer, C.; Arroyo, J.; García Ramos, C.; Menéndez, A.; Lavilla, M.; Izquierdo, F.; Villa Elízaga, I. and Zamarriego, J. Effects of standing position on spontaneous uterine contractility and other aspects of labour. J Perinat Med 1975; 3: 89-100.

17. Mendez-Bauer, C.; Arroyo, J.; Menéndez, A.; Salmeán, J.; Manas, J.; Lavilla, M.; Martínez San Martín, S.; Villa Elízaga, I. and Zamarriego, J. Effects of different maternal positions during labour. In: 5th European Congress Perinatal Medicine, Uppsala, Sweden, 9-12 June 1976; p. 233-237. Almqvist & Wiksell, Stockholm.

18. Araujo, G. Personal communication.

19. Costa, P.L. Personal communication.

20. Paciornik, M. Parto de cocoras. Aprenda a nascer com os índios. Editora brasiliense, Sao Paulo, 1979; p.183.

21. Perrusi, T. El parto vertical. Hipótesis de trabajo y plan de investigación. La Semana Médica, 1964; 125: 829-833.

22. Rosenvasser, E.B.; Hochbaum, S.I.; Lijtenstein, B.; Yahbes, E.A.; Pizzuti, A.M. and Landesman, R. Psicoprofilaxis, sillón de partos y gobierno y conducción del mismo. ler Congr Argentino de Psicoprofilaxis Obstétrica, Buenos Aires, Argentina, Nov 1971.

23. Caldeyro-Barcia, R.; Giussi, G.; Storch, E.; Poseiro, J.J.; Lafaurie, N.; Kettenhuber, K and Ballejo, G. The bearing-down efforts and their effects on fetal heart rate, oxygenation and acid base balance. In: 1st International Berlin Meeting of Perinatal Medicine, 15-16 June 1979, Berlin.

24. Sumner, P.E.; Wheeler, J.P. and Smith, S.G. The labor-delivery bed-simplified obstetrics. J Reprod Med 1974; 13: 158-161.

25. Caldeyro-Barcia, R.; Giussi, G.; Storch, E. Poseiro, J.J.; Lafaurie, N.; Kettenhuber, K.; Ballejo, G.; Cordano, M.C.; Izquierdo, A. and Villarrubia, Z. Physiological and psychological bases for the modern and humanized management of normal labor. International Year of the Child Commemorative International Congress, Seminar on 'Recent Progress in Perinatal Medicine". Japan Ministry of Health and Welfare, Tokyo, Oct 1979 (in Press).

26. Giussi, G. et al. (Unpublished observations).

DISCUSSION

CHAIRMAN: Professor R. Trussell

Professor Mokgokong: Professor Harrison presented a graph showing that the highest maternal mortality rates were in the very young - more so even than all the high parity patients. This finding seems to be contrary to findings in my own community although the environments are similar. Our findings show the highest mortalities in the high parity older patients, although I would agree that the very young teenagers do show a higher mortality than the middle groups. Is there some reason why these very young girls - who should be expected to have greater resilience against disease - should die?

Secondly, Professor Harrison showed better maternal mortality rates for his educated patients and he went on to say that they were taller than the less educated patients. Surely this is a nutritional problem in that the better educated are the 'haves' and poorly educated are the 'have nots', and this is what has led to a higher maternal mortality in the less educated group.

Professor Harrison: These are the facts and the figures. In the situation in which we practice, the mortality or loss of life is very high among early teenagers. One of the reasons for this is that although we are talking about teenagers, a lot of our girls are as young as 13 or 14, whereas in many countries we find that many of them are nearer 15 or 16, and there is a world of difference in physical development between the 13-year-old and the 15-year-old.

The other point is that the majority of these teenagers are very short. Their mean height of 1.52 metres compares with 1.57 metres. The main medical reasons for the high mortality are eclampsia, anaemia and cephalo-pelvic disproportion - most of which is preventable. If these teenagers can receive antenatal care, it is possible to lower the figures for maternal and fetal mortality in this population.

I realise that there are many factors associated with education. I am not suggesting that the relationship between education and maternal mortality is cause and effect although I do think that there is an association. Besides the differences in nutrition, we

can think of many other differences which make for lower mortality rates in the more educated women. We have determined certain characteristics of the educated mothers quite apart from their better nutrition and their better health. They are marrying at the 'right' age, which is very important. We hardly saw an educated woman who married or who had a baby under the age of 16. The other crucial point is that they all have antenatal care, and they all come early to hospital when things go wrong.

In our situation formal education has played a very important role, but I should stress the importance of functional education as opposed to mere education. In certain communities the girls go to school and they are able to read individual words, but their comprehension is poor.

Dr. Edström: I would agree with Professor Harrison on the very young teenagers. The WHO has started to recognise this group as one of the particular risk groups. We have surveyed the literature from a number of countries with very different circumstances, and to some extent it depicts risks which are the same in the most highly developed countries and in the developing countries or the very poor areas. Whether the teenagers are married or unmarried, the under 16s seem to be a very high-risk group. The group of 16-19s is usually reported together, and perhaps because of that the 16-year-olds come out as fairly low risk. If it is broken down, we might even find that the actual break point is above 15 years.

Professor Mokgokong: What actually causes the deaths? Pre-eclampsia, eclampsia and cephalo-pelvic disproportion are all preventable situations. We should be studying what causes these girls to marry so early, and why they do not attend the services. I think that this is the underlying factor and not the age.

Dr. Edström: There is some data available from Tanzania as well as from the United States showing that a part of the problem is preventable, but that there are also biological factors that affect those girls who are very close to the menarche when they get pregnant.

I agree with Professor Mokgokong on the need to look for the underlying causes and the need to look at what can be done not only in preventing complications in the pregnancy but also towards postponing the pregnancies.

Professor Beard: Continuing on the question of the limitation of family size, could I ask Professor Ratnam about Professor Harrison's statement that he felt that legislation cannot overcome cherished traditions? It seems to me that it would depend on how the legislation was actually executed.

Professor Ratnam: It is very difficult to compare how something would work in one country as opposed to another. From experience it can work, but, without the infra-structure to implement the legislation, it will not work. Given a situation where that infra-structure exists and there is the capacity to implement it, then the legislation does work. It is one thing to legislate but it is another matter to implement that legislation.

In a small country like Singapore such legislation is easy to implement, but in a country like India or Nigeria it might be possible to legislate, but not to implement it. Where are the resources to implement such legislation? It is difficult to compare the situation of the less developed countries and the less educated countries where the populations will be less conscious of the benefits that such legislation provides. Education is a much lengthier process than legislation, and there is little point in legislation which will not be implemented.

Dr. Armar: There is also the question of political expediency. There are situations in which legislative procedures might be desirable and yet the politicians, having regard to the need to maintain their political image, and also thinking of the future, may be reluctant to bring in such legislative enactments.

In this connection I speak of our experience in Ghana where the population trends in the 1960s clearly indicated that the population growth rate was too high and there was a need for some anti-natalist type of legislation, and yet it was not possible, in spite of all the facts being available, until a military government came into power and the government was capable of adopting a pragmatic approach without being influenced by considerations of political expediency.

Dr. Chan: The cultural and religious milieu of the people for whom legislation of this type is to be implemented is equally important. In a secular society such as Singapore where religion is not all that important and where customs and traditions have been broken down to a considerable extent, these ideas come through even more easily than in many established societies.

Dr. Naeye: Which of the very specific measures that Professor Harrison and Professor Caldeyro-Barcia are planning or implementing will get rid of which diseases? In Addis Ababa we found that the sanitary facilities did not relate to anything, but the actual volume of water that people used had a noticeable effect. Even if they were very poor, if they bought a lot of water and used a lot of water, they had very few amniotic fluid infections, but if they had a moderate income yet used very little water then they had a lot of infections.

Secondly, among these very poor women on very low-calorie diets, 1,400 calories a day, the women who did not have to go out and work, or grind grain, had far better outcomes and far bigger babies. I shall not go into all the biologic details, but it looks as though the calories that were actually available for the pregnancy were a crucial factor in the outcome.

Out of all this social, political and medical milieu, which factor should we pick out, and where should we put our energies, our funds and our brains, to get results for which diseases?

Professor Trussell: That question may well be better answered towards the end of the three days.

Perhaps each of the speakers would mention what they consider to be one of the most important factors.

Professor Harrison: The factor that I would pick out has nothing to do with obstetricians. In the situation in which I work, education is easily the most important. Education forms the basis of everything else. If we want to ensure that every woman has antenatal care, we open antenatal clinics. These cannot be run effectively if the people are illiterate, or if the equipment does not work. Technicians will be needed to keep equipment in good repair, and no reliance can be placed on illiterates. Thus, if I was to pick out the one thing that would be very beneficial in the long run, and not just for maternal and perinatal mortality but for society as a whole, it would be women's education.

Professor Caldeyro-Barcia: What we tried to do first was to increase coverage, especially antepartum coverage, to one hundred percent of the population of pregnant mothers. Secondly, to teach the primary health workers, whoever they are, to detect the high-risk cases and to refer them to the secondary level.

By these two methods, and also by educating everybody - including the obstetricians who produce a lot of iatrogenesis and who are responsible for many complications in labour - we hope to improve maternal/child health, which can be improved with those resources that are already available.

Professor Trussell: This is perhaps a suitable moment to close. Many of the factors will be discussed in detail in later sessions. Over and over again we have discovered an emphasis of the interplay of all the factors that go to make up a nation that have their impact on maternal and child health. Out of this we can at least feel that most of these factors ultimately are not difficult esoteric medical problems. They are all problems that are capable of solution, and what comes out of this discussion is a message of optimism.

Finally, the concept that came from Latin America, that even in these days of political upheaval, once an infra-structure has been established, and once a service has been established that is providing care for mothers and children, then it seems to be self-perpetuating in spite of the overwhelming events that seem to descend on countries from time to time.

CHAPTER 3

PROVISION OF MATERNITY SERVICES

FIELD RESEARCH IN THE DELIVERY OF HEALTH CARE

Dr. T. Barns

Professional obstetric care in the West is a far cry from the lack of basic facilities, bare earthen floors and infections known to physicians practising in the developing world. These circumstances are reinforced by adverse dietary and birth customs, intoxication with indigenous remedies, and synergistic effects of malnutrition, infection and unregulated fertility.

MATERNITY SERVICES AS THEY HAVE EVOLVED

After several decades of investment in health facilities and training programmes for doctors, nurses and auxiliaries, institutional buildings in the emergent countries often remain under-utilized. Health personnel, after completing their training, tend to congregate towards urban practice or migrate to better paid jobs abroad, so that the further one goes from the towns the more perfunctory the health services become.

Institutions

A three tier system has grown up comprising of:

i) Western style hospitals located in urban centres where obstetrics and paediatrics are practised as separate disciplines;

ii) less sophisticated first referral hospitals at district level where Caesarean sections and treatment of ruptured uterus can be undertaken, albeit with limited blood transfusion and anaesthetic facilities;

iii) health centres and sub-centres which are the furthest out-posts through which general health services including first line maternal and child health care reach the community.

The distances separating these three tiers are magnified by logistical problems of transport and inter-communication. The planning and administration of these services is controlled by civil servants advised by senior public health officials who, often lacking first hand knowledge of field conditions, may attempt innovations without adequate preliminary study or field testing.

Trend to Combine Maternal and Child Health

A further problem arises from the training of doctors and nurses in centres where obstetric and paediatric care are practised separately. Thoughout the third world care of mother and child in the community are inseparably linked by tradition and by social factors which demand that medical attendants, in addition to offering maternal and child care, should treat the minor ailments of other family members as well.

Thus, while Maternal and Child Health Care (MCH) as taught to the undergraduate remains as a hazy concept, in the community outside the teaching hospital he is required to deliver an incisive package in which services to mother and child are closely intermeshed. The service begins with the diagnosis of pregnancy and continues through the subsequent antenatal, post-natal, interconceptional and weaning periods of the time of the infant's second or third birthday. In this way the diagnosis of pregnancy is an occasion for:

i) first antenatal examination and identification of suitable subjects for termination of pregnancy;
ii) assessing the health of other siblings more especially those whose displacement from the mother's breast may adversely affect their development;
iii) the antenatal weighing of such infants which is more important than recording the weight of their mothers;
iv) protection of the unborn child by antenatal tetanus vaccination of the mother;
v) post-partum care which is inseparable from neonatal care;
vi) lactation and puerperal supervision integrated with routine infant weighing;
vii) immunisation and monitoring of developmental milestones in the child;
viii) family planning advice, especially at the time when lactational suppression of ovulation comes to an end and menses and marital life are resumed. Family planning counselling and services integrate with this MCH care cycle at every point.

Service research focuses on how these services can be made accessible to the community as part of a package comprising general health and sometimes over all community development as well.

In this way service research links with current experiments in undergraduate curriculum building, in which attempts are being made in some medical colleges in South East Asia to teach maternal and child health as a coherent entity, practised by the combined departments of obstetrics and paediatrics, rather than presenting it piecemeal as at present. (A textbook of MCH for medical students has recently been edited by Dr. F.H.W. Miller under the auspices of the World Health Organization (WHO) for use in centres where the teaching of obstetrics and paediatrics has been integrated) (1).

Strategic Use of Personnel

The sheer magnitude and cost of providing total obstetric cover in line with the expectations of their growing populations is beyond the means of most governments. In countries striving for economic independence health budgets receive low priority and improvements can be made only by optimising the scarce fiscal and manpower resources already available. Wherever doctors are outnumbered in ascending order by nurses, trained auxiliaries, traditional healers and birth attendants, it is necessary to find ways of delegating responsibility to those with lesser training, consistant with good care. This can be done by making fullest use of the health worker at sub-centre and village level, by bringing traditional healers into the system and by developing screening policies.

The fact is that many health problems are simple and routine and susceptable to symptomatic treatment by health auxiliaries. The greatest block to effective service is the large mass of simple and common ailments which make it impossible for doctors to devote their attention to priority problems.

GENERAL VIEW OF FIELD RESEARCH IN OBSTETRIC CARE

Field research has hitherto concerned itself mainly with the delivery of basic health care to the community. Little research has concentrated exclusively on the delivery of obstetric care, neither, with the notable exception of a study published last year by WHO (2), have enquiries been undertaken at a technical level into the alternative forms of obstetric intervention which may be suitable for dealing with difficulties when they are encountered at the periphery where facilities are limited.

The background problems outlined above have led to experimentation with the organisational framework which relates to delivering health care in general and MCH care in particular. Thus field research has been dominated by projects investigating the mechanics of alternative approaches to basic health service delivery. This in recent years has become a growing point in medical research engaging workers from numerous diciplines including public health, international health, social medicine, paediatrics and obstetrics, sometimes aided by anthropologists, biostatisticians and functional and cost systems analysts (people who find out how things work and how much they cost). The direction and planning of these field experiments has generally remained in the hands of university departments of public health or their offshoots in international health. A strong input to this type of research has been made by paediatricians, but the involvement of obstetricians has been marginal. Published material in the obstetric literature on peripheral or community obstetric care is minimal. By default, decision on the clinical obstetric content of many field research projects has been left to public health workers who have transplanted institutional midwifery rituals wholesale into peripheral health care systems without always considering their relevance to field conditions.

Historically, the origins of operational field research are due to the efforts of Andrija Stampar in Yugoslavia (3) and John Grant in India (4), during the third and fourth decades of this century. Their concepts were promoted by field demonstrations assisted by the Rockefeller Foundation in Sri Lanka, India, Latin America, Turkey, Indonesia, the Philippines and Burma.

More recently, the adoption of national family planning and pregnancy termination programmes in many developing countries has given rise to a need to integrate population control activities into existing MCH care routines. This in turn has further stimulated action research as well as providing new sources for project funding.

Since 1963 at least fourteen major projects into which Family Planning has been integrated, and more than one hundred minor ones, have been reported from 25 countries of the developing world including the well known Narangwal (5), Gandhigram (6), Jamkhed (7) and Palghar (8) projects in India, the Danfa project Ghana (9), Etimenti in Turkey (10). Development and evaluation of integrated delivery systems in Thailand (11). Overlapping reviews of these activities by World Bank (12) and by a WHO/

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UNICEF team (13), and by a consultation organised by the Society of Health and Human Values held in 1977, have shown how frequently these projects prove to be prolonged and costly undertakings exceeding five years in duration.

The collaboration of foreign universities, agencies and foundations has frequently been sought for technical and financial backing, a demand which gave impetus to the growth of faculties of international health within the Departments of Public Health and Hygiene of many American Medical Schools. Budgetary support has also been forthcoming from the United Nations agencies, private bilateral and medical missionary sources as well as from the World Bank. In this country a modest role has been played by institutions such as the London and Liverpool Schools of Tropical Medicine, the Public Health Department of the Edinburgh Medical School, the Ministry of Overseas Development and by individual members from the Departments of Tropical Child Health at Great Ormond Street Hospital, the University of Aberdeen and elsewhere.

RESEARCH OBJECTIVES AND CONTENT

Most field research projects have investigated alternative service delivery patterns capable of replication within the available health resources of the country. Enquiries focus on techniques of population coverage, on delegation, case identification and referral, the development of health worker manuals: methods for retraining and reallocating suitable roles within the system to local health workers including volunteers, traditional birth attendants, indigenous medical practitioners, etc. The collection of information on family planning has included attitudinal studies, family planning user and continuation rates, investigation of alternative family planning services outlets, and the role of non-physicians in family planning promotion and technical service procedures.

A new open mindedness has grown up concerning many of the traditional roles and assumptions which initially were borrowed from the West. Field research focuses increasingly on measurement of functions in terms of clinical content of tasks performed, to whom given, on what occasions and where, rather than on the personnel who perform them; decisions about which category of worker can best be trained and delegated to carry out these tasks being left until later (14).

While enquiries have mainly concentrated on the problem of delivering maternal, child and comprehensive health care to dispersed peripheral rural populations, the growing health concerns of deprived urban and semi-urban slum squatters, the detailed policies and content of obstetric care at district and first referral hospital level and the logistic problems of intercommunication and transport upon which the credibility of an obstetric service rests, have been the subject of relatively few investigations

Just as there is a tendency to combine the delivery of MCH services with primary health care in these experiments, a newer school has come to regard health care as part of a package involving total community development. Thus an enquiry into the promotion of maternal care may end up as only one component in a far wider spectrum of activities as exemplified by the work at Jamkhed (7) extending to agriculture, veterinary care, literacy, irrigation, education in schools, even dancing, drama, music and religious recitals. Integrated rural development is thus leading towards a new administrative culture in which old boundaries between government departments may need to be demolished and replaced by integrated team work, a team on which a louder technical obstetric voice in future needs to be heard.

FIELD RESEARCH TECHNIQUES

Techniques for measuring and recording information about service inputs and their impact are basically those traditionally employed by health administrators i.e. empirical observation: interpretation of statutory notification of vital events and morbidities: scrutiny of service records maintained in clinics or on home visits: surveys carried out on population sample basis and cost analyses based on accounting and administrative records.

Surveys may include enquiries into knowledge, attitude and practice of the community towards the services offered, retrospective obstetric histories, simple laboratory investigations or biomedical measurements to establish local norms for heights, weights, weight gain in pregnancy, girths, birth weights etc., many of which have direct implications for service referral policies.

As researchers have made successive attempts to implement the visions propounded by Grant and Stampar, things have been found to be more complicated than those pioneers had anticipated,

and in recent years there has been a progressive sharpening of the quantitative tools used in field research. Industrial work sampling methods have been adapted to measuring the performance of health staff in terms of time and clinical content of health worker/patient contacts, and in-depth enquiry has begun to be extended to the avoidable factors affecting perinatal outcomes, a source of information of immediate relevance to obstetric service policies.

The use of more sophisticated techniques requires building up a team of research personnel:

i) health workers responsible for delivering the service and for recording their own clinical observations and activities;

ii) field investigators to monitor and record the activities of the health workers and measure the response of the community;

iii) research staff who plan, direct, process and interpret the data so obtained.

In this manner a multi-dimensional service model comes to be constructed during the course of an experiment comprising the type, frequency and place of each patient/health worker contact, its clinical content and the time and cost involved. A similar time/cost and content profile for those other activities which subtend the service will also be built up, relating to the training of health personnel, transportation, supplies, etc.

There are many aspects of service delivery, however, which are not susceptible to exact quantification. Thus field research techniques continue to bear a closer resemblance to the social sciences than to the physical sciences.

STRATEGIES FOR PLANNING AND IMPLEMENTING A FIELD PROJECT

Field projects vary in size and complexity from simple pilot studies and field demonstrations to long-term prospective enquiries using some of the more refined research techniques listed above.

In setting up a field project the following practical considerations should be borne in mind (15):

1. The area chosen for the experiment ought to represent the region which the problem relates.
2. At least minimal data should be already available on vital events.
3. The project should enjoy support from the local community as well as collaboration from existing health and social services.

Projects are planned and implemented in four stages:

STAGE ONE: Evaluation and analysis of an existing health care situation.
STAGE TWO: Identification of problem areas with formulation of new approaches are then framed into alternative service delivery patterns and routines and these built into a health package capable of being tested under field conditions.
STAGE THREE: Introduction of the above experimental health package into a selected field situation after preliminary pretesting the feasibility of the arrangements made for monitoring its cost and impact on the health of the study population.
STAGE FOUR: Analysis of research data, publication of findings, and replication of the experiment elsewhere on a wider scale.

During the second stage, which includes the development of the plan and design of the project, the following are of crucial importance to the cost and outcome of the final analysis of the data which is to be collected: a clear statement of the main questions to be answered: identification of the variables and dependent variables by which the impact of the innovations are to be judged and identification of the procedures devised for their measurement.

Research oriented patient's service records, proformas and questionnaire sheets, are designed and pretested during the project "tooling up" (Stage two), as far as possible making use of precoded questions. Coding manuals, interviewing manuals and supervisors' manuals need to be prepared and tested beforehand. Also arrangements must be made for the recruitment and in-service training of service personnel, field investigators and supervisory staff, whose reliability determines the quality of the data that is subsequently collected. Following collection of information from the field, data processing routines consist in field checking, coding, editing and key-punching the findings onto cards or tapes for analysis and storage.

PROJECT STAFF

Project personnel are of three categories.

1. Research staff members: preferably a joint undertaking is entered into between regular health service officials at policy decision level and university faculty or others who provide the skills required for development of a research design and the treatment and analysis of data. Whereas the project chief investigator is traditionally a community health physician, he should collaborate closely throughout the experiment with an obstetrician and paediatrician who have had previous community experience.

In many field projects a good nurse/midwife combining in her background public health and nurse educational experience, has proved a key member of the research team.

Assistance may also be needed from time to time, depending on the design of the project, sample size etc., from an epidemiologist health statistician and perhaps a demographer, systems analyst, social scientist, anthropologist and a computer programmer.

2. Service staff members: as all field projects combine research with service, regular health service personnel will be recruited as health centre physicians, nurses and midwives. In some projects traditional healers and birth attendants may also be included.

3. Field investigators and ancillary project staff: in large projects, recruitment and training of interviewers, field investigators, coders and supervisors will be needed. The provision of vehicles and maintenance staff for transport also forms a substantial budgetary item. Research staff should live on the spot as far as possible under village conditions in order to identify with the customs of the populations they are studying. Interest in the field experiment should be sustained by the regular sharing of interim findings with national policy decision makers. This means that data processing must be kept up to date and accumulation of backlog avoided.

A crucial stage in field research and one about which least is known is the stage of replication (Stage four). Too often there is a gap between the dedicated work and new directions forthcoming from a field experiment and their implementation on a wider scale.

Whereas field research aims at demonstrating alternative approaches feasible within the existing resources of a health system, it should simultaneously identify the administrative steps by which these innovations may later be introduced. Involvement of health officials in planning the experiment from the beginning, maintenance of close liaison with them throughout the life of the project and incisive publication of results keeps the dialogue alive between field workers and health planners and increases the likelihood of findings influencing future health policy decisions. One well known field project (5) made provision in its research budget for holding annual on-site conferences to which all senior officials from the health minister downwards were invited, to participate in a three day inspection and interim discussion of the project findings.

CONCLUSIONS

Whereas the importance of service research is increasingly stressed in the World Health Assembly, it is often asked whether the time, effort and investment has justified itself in its influence on the development of health care.

From an obstetrician's point of view the preoccupation of current field research with the organisational aspects of service delivery has often appeared to put the cart before the horse.

1. The design of maternity service should logically rest upon:

   i) a data-base of known obstetric outcomes;
   ii) information concerning the sequential events and predisposing avoidable factors underlying these outcomes, and
   iii) a knowledge of the biomedical norms of the community upon which policies for patient referral and high risk strategies may be developed.

2. A re-evaluation of the clinical content of obstetric care at the periphery urgently needs to be undertaken. A gulf is widening between the training of doctors in institutional obstetrics with its growing reliance on laboratory diagnosis, fetal monitoring and abdominal delivery, and the need at the periphery for pragmatic on the spot diagnosis and management of obstetric difficulties, for which a judicious blend of conservatism with vaginal manipulation often proves the most effective form of intervention.

3. Acceptance of maternity services by a traditional society also rests upon health planners developing a deeper knowledge of the birth, dietary, lactational, work and cultural practices, customs and beliefs of the community for which they are responsible, and of the effects of these factors on the outcomes of pregnancy and delivery.

4. In the field of family planning micro-level study of the entry points, clinical indications, and opportunities for family planning advice which present throughout the routine care cycle of women and children should precede the wholesale imposition of family planning policies onto a community.

5. The studies of alternative methods for intercommunication, transportation, and summoning obstetric aid has received insufficient attention although it is known that maternal deaths may be substantially reduced by earlier instigation of treatment.

6. In spite of these shortcomings many useful insights have already been gained from field research into the dynamics of service delivery systems and the internal structure of the health team. These have resulted in the responsibilities of auxiliaries in some countries being considerably increased.

There are several examples of approaches to MCH and general health care, first tried out as field experiments and later adopted as national policies. In family planning the synergism demonstrated between family planning acceptance and maternal care has strongly influenced the preference of most countries for 'integrated' as opposed to 'vertical' family planning programmes. It must be admitted, however, that much work has been done leaving little impact. The early publication of results while interest in a project is still alive is an important factor in whether or not experimental findings in the field are eventually adopted or merely filed away and forgotten.

7. Evaluation of ongoing services as well as innovative approaches are an important part of planning and administering any programme. Without that it is impossible to determine whether aims and objectives are being fulfilled, targets reached, the health of the people improved, expenditures justified, or personnel productive.

References

1. Dhillon, H.; Das Gupta, S.; Krishna Menon, M.K. and Shah, P.M. Handbook for the delivery of Care to Mothers and Children. Ed. F.J.W. Miller. Delhi Press 1978.

2. Essex, B. Management of Obstetric Emergencies in a Health Centre. Adams & Sons, Dover. Copyright World Health Organization, 1978.

3. Serving the Cause of Public Health. Selected papers of Andrija Stampar. Ed. M.D. Grimek. Monographic series No 3. Andrija Stampar. University of Zagrab, 1966.

4. Health Care for the Community. Selected papers of Dr. John B. Grant. Ed. C. Seipp. American Journal Hygiene. Monographic series No 21. John Hopkins Press, Baltimore, 1963.

5. Narangwal Project: John Hopkins Rural Research Centre. The Narangwal Population Study Report. John Hopkins University Press, Baltimore, 1975.

6. Gandhigram Project: Pisharoti, K.A.; Ranganatham, K.V.; Setha, S. and Dutt, P.R. The Athoor Experience: Implications for a State-wide Family Planning Programme. Gandhigram Institute of Rural Health and Carolina Population Centre. University of N. Carolina, 1972.

7. Jamkhed Project: The Changing Roles of and Education of Health Care Personnel. Papers from a Consultation held at Rockefeller Foundation Study Centre, Villa Serbelloni. Society for Health and Human Values. Philadelphia, U.S.A. May 1977; p123.

8. Palghar Project: Shah, P.M.; Udani, P.M. and Shah, K.P. Analysis of the Vital Statistics from the Rural Community. Palghar Indian Paediatrics 1969; 6 No 9 595-607.

9. Danfa Project: Ampofo, D.A.; Nicholas, D.D.; Fosu-Amash, S.O.; Blumenfeld, S. and Neumann, A.K. The Danfa Family Planning Programme in Rural Ghana. Studies in Family Planning, 1976; 1: 10 266-274.
Heller, M.D.; Douglas, H.; Godwin, K and Nukunya. Am. Evaluation of the Danfa Comprehensive Rural Health Project in Ghana (Mimeo) 1975.

10. Etimenti Project: "The Record of Family Planning Programmes". Studies in Family Planning. Unpublished appendix to Berelson, B. and Friedman, R. 1976; 7: 1.

11. DIEDS Project: Report on the Development and Evaluation of Integrated Delivery Systems. American Public Health Association. Division of International Health Programmes, 1975.

12. Cuca, R. and Pierce, C.S. An overview of Experimentation in Family Planning Delivery Systems. The World Bank. Population and Resources Division. Development Economics Dept, Document Tis/9, 1977.

13. Dukanovic, V. Alternative Approaches to Meeting Basic Health needs in Developing Countries: a joint UNICEF/WHO Study. Ed. E.P. Mach. Geneva WHO 1975.

14. Reinke, W.A.; Alexander, S.A.; Parker, R.L. and Taylor, C.E. The Functional Analysis of Health Needs and Services. Dept of International Health. John Hopkins University. New Delhi Publishing House, 1976.

15. Selwyn, J.S. Instructional manual for Conducting Field Studies in the Use and non-use of MCH/FP Services.

International Bank for reconstruction and development Population Project Dept. Washington D.C. Document P.N.8/RES.5, 1977. World Health Organization. Symposium on the Identification of High risk persons and population groups. WHO Regional Office for Europe, 1972. Windsor 1972. Copenhagen 1973 (document EURO 4911) World Health Organization (1978) Risk approach for Maternal and Child Health Care. Geneva. Offset Publication No 39.

MANAGEMENT OF OBSTETRIC EMERGENCIES IN A RURAL AREA

Professor M.K. Menon

Obstetrics is perhaps the most ancient art in medicine, though in the technologically advanced countries of the world it has become a science and no longer an art. Developments in science and technology and vast improvements in socio-economic standards in the well developed areas of the world have altered the practice of obstetrics in these regions. Maternal mortality has been reduced to almost negligible levels and perinatal mortality to a less but very significant extent. In the developing countries obstetrics is beset with formidable problems and maternal, perinatal and infant mortality continue to be high.

The people of these developing countries are subject to varying degrees of poverty, disease and malnutrition, high birth rate and high death rate, high infant mortality and low life expectation. In many or most of them traditional indigenous systems of medicine and superstition still have a strong hold. Many developing countries are literally in a state of revolution, and rising expectations and rural change follow the emergence to independence.

In the majority of these countries doctors and paramedical personnel of all categories are in short supply. Where doctors are available, their distribution is not uniform. For example, in India, 75-80% of the doctors practice in the cities and large towns while 80% of the population live in the rural areas where the doctor population ratio is in the region of about 1:100000. In the cities and large towns obstetric services are provided by the teaching hospitals, large district hospitals, and private nursing homes, with domiciliary care provided by the municipalities. A survey in Madras city showed that 95% of deliveries within the city limits had some form of skilled attention - either from hospitals, doctors, nurses, midwives or other personnel who had some training. In the rural areas less than 10% had similar attention. Despite the free services available in the government hospitals, in the urban areas only about 25-30% are 'booked' deliveries, the rest being emergency

admissions. The most critical problem in obstetrics today is how to meet the needs of the rural areas.

In India it is estimated that 82% of the population live in about 55 million villages, each village having a little over 500 people. These villages are widely scattered with poor roads and communications. Many villages have no electricity or even safe drinking water. Sanitation is poor and telephone system does not exist. The delivery of obstetric care in this environment poses problems which often defy solution and is beyond the capacity or responsibility of the obstetrician alone. However, a plan for the delivery of obstetric care has been worked out.

COMMUNITY OBSTETRIC SERVICES IN INDIA

This is based on a system of screening and referrals.

a) There is one Primary Health Centre (PHC) for an area of 400-500 sq. km. and catering to the needs of 80-100,000 population in that area. The centre has 10-20 beds, one or at most two physicians, a number of paramedical personnel - Auxiliary Nurse-Midwife (ANM), or their equivalent, health supervisors and other multipurpose workers. The equipment available is minimal but sufficient to carry out obstetric procedures, and if necessary certain major surgical procedures like abdominal sterilisation. Also included in the facilities is a Jeep for transport.

b) Related to the PHC are 8-10 Sub-centres, one for 8,000-10,000 population. At the sub-centres there is one ANM or her equivalent who is in charge and the sub-centre is provided with the basic minimum equipment for antenatal care and normal delivery. There are no beds at the sub-centre: It is the furthermost outpost and is in constant touch with its PHC from where the physician makes periodic visits, at least once a fortnight. There is no transport at the sub-centre. From the sub-centre the ANM refers all her problem cases to the PHC after screening.

c) The PHC physician screens the cases he sees and refers his problem cases to his Referral Hospital - usually the nearest Taluk or District Hospital from

where further referral if necessary would be to a teaching hospital. These hospitals provide the back-up service. Early rather than late referral is their motto.

SUB-CENTRE OBSTETRIC PRACTICE

Apart from other duties the ANM or her equivalent at the sub-centre is responsible for providing obstetric care to all pregnant mothers within a radius of not more than 4-5 km., and a population of 4,000, whose homes she visits periodically. She also provides antenatal care to those who attend her sub-centre. She identifies the risk or problem patients and refers them to the PHC as early as possible. She conducts normal deliveries at the patients' homes and also assists the traditional birth attendant if the latter seeks her help. If any problems crop up during delivery and she is unable to manage them, she sends for the PHC physician or, if possible, takes the patient to the PHC. She also provides postnatal and infant care and family planning advice. The plan looks good but in actual practice many things may and do go wrong. There are often occasions when in the course of an anticipated normal labour, problems suddendly crop up.

Examples of Clinical Problems

Delay at the Outlet - If this is due to an unyielding perineum, an episiotomy would be the answer. The midwife can do this and perhaps suture it also. More often it is left unsutured with the well known sequelae. If the delay is due to other factors which are beyond her competence to deal with, she has either to send for the PHC physician or if a conveyance is available, usually a bullock cart, she takes the patient to the PHC to be dealt with by the PHC physician. This prolonged delay affects the fetus which often is still-born.

Post-Partum Haemorrhage Following Home Delivery - If the patient is bleeding profusely and the placenta has not separated, the midwife can give an oxytocic drug intramuscularly, and massage the uterus to make it contract. It is taught that no attempt will be made to express the placenta unless it has separated. If these measures fail and the bleeding continues with the placenta still unseparated should she take the bleeding patient to the PHC if that is possible, or send a messenger to the PHC physician seeking his immediate help, or remove

the placenta manually with no help of any sort and no facility even for the minimum resuscitation? Further, during her training has she ever done a manual removal? Let it not also be forgotten that, should the patient die after a manual removal or other indicated obstetric procedure, the ANM and sometimes even the physician may find it difficult to get away from the house unharmed. Are these aspects of emergency obstetrics taught during the midwife's training, not in theory but in practice? What should be done and what should not be done under such circumstances?

Resuscitation of The Newborn - All that the midwife can do is to clear the upper respiratory passages with a mucus sucker and perhaps mouth to mouth breathing. The standard of obstetric care thus falls off rapidly as it filters down to the periphery.

Many times, even in the cities, we have seen patients with retained placenta and bleeding brought to hospitals only to be declared dead or moribund. It is one thing to talk of flying squads but when the communication system is based on a messenger, and the roads are often unfit for motor transport, what is the use of a flying squad? It is not uncommon for the PHC physician to find, when a call comes from the ANM, that his transport is on other duty or is out of order.

It is therefore up to those in charge of the training of the ANM to ponder deeply over these problems and provide a suitable training programme in practical obstetrics within her environment which will help her to face some of these difficult problems.

OBSTETRIC PRACTICE IN THE PRIMARY HEALTH CENTRE

More than 60% of a physician's work at the PHC pertains to maternal and child care. His main duty as far as obstetrics is concerned, is to provide obstetric care for all patients referred to him from the sub-centres and also to those who come directly to the PHC. It is imperative for him to examine all patients and determine early in pregnancy or labour which can be looked after by him at the PHC and which should be sent to his referral hospital. To cite examples requiring referral: elderly or short statured primigravidae, suspect cephalo-pelvic disproportion, bad obstetric history, antepartum haemorrhage, severe PET and eclampsia, medical complications like heart disease, severe anaemia (Hb less than 5g is common), infective hepatitis, diabetes, malpresentations persisting after the 32-34th week of pregnancy and any other

problem which he feels is beyond his competence and facilities to manage. All these should be referred early. Women in labour may be brought to the PHC for the first time either referred from the sub-centre or after the traditional birth attendant has failed to deliver the child. If early in labour and complicated, he, if possible, refers her to the referral hospital; if late or it is impossible to transport her, he will have to do what he can at the PHC. Thus, as for the ANM, his main duties are screening and early referral of complicated or high risk cases.

This system of screening and referral is a good one. But what happens when it breaks down? It breaks down when no transport is available, when patients come in too late or when, for socio-economic reasons, the patient is unwilling to leave her environment. In such an emergency the physician is compelled to deal with the problem despite his lack of expertise and facilities. Such occasions are common and the management of these emergencies poses problems bristling with difficulties.

In the absence of reliable vital data, it would be unwise to present the statistics regarding the incidence of various complications in pregnancy and delivery and their results. However, some estimates suggest that the maternal mortality in the rural areas ranges from 10-15 per 1,000 and perinatal mortality 120-150 per 1,000.

Obstetric Emergencies in a Primary Health Centre

It is not proposed to go into all such emergencies and their management. My aim is only to indicate some of the common ones briefly, to emphasize and demonstrate how unreal is the present training of those who have to handle these problems.

Antepartum Haemorrhage - It is imperative that the physician refers the patient as quickly as possible to his referral hospital after sedation and, if possible, proper resuscitation. If he is unable to do so, he will be obliged to keep her at the PHC, watch in the hope that the bleeding will stop on its own and then later, when possible, transfer her to the referral hospital. Meanwhile he could make attempts to get a suitable donor and give a blood transfusion if indicated, but this is often only wishful thinking. If the bleeding continues, giving rise to systemic disturbances, he will be forced to take active management. He should do a gentle vaginal examination and artificially rupture the membranes if no placental tissue is felt or there is incomplete

placenta praevia. He then waits in the hope that labour may start and the bleeding is controlled; he could use an oxytocin drip if he has the confidence. On the other hand if it is a complete or Type III placenta praevia, as a life saving measure and despite all handicaps, he will be forced to do a classical Caesarean section. This is an operation which must, if possible, be avoided at a PHC. The alternative is for him to watch the patient gradually sinking under his eyes which I do not think anyone would justify. In the absence of blood for transfusion he has to rely on glucose saline for resuscitation. Naturally the mortality rate will be high. It is one thing to talk about management in institutions with specialists and facilities, but under the conditions in a PHC, what is the physician to do?

Eclampsia - These patients have to be managed entirely by sedative drugs. There is not much choice and whatever is available has to be used, usually morphia, barbiturates, chlorpromazine or pethidine. The patients often go into labour after repeated convulsions and delivery. Some survive, others die later of complications. Quite a few die undelivered.

Retained Placenta and Post-Partum Haemorrhage (PPH) - These are common emergencies. The doctor can remove the placenta manually and try to control the PPH by an oxytocin drip. In the absence of compatible blood for transfusion, the mortality rate is usually high. There is no time for him to transfer these bleeding cases to his referral hospital miles away. In fact, he often resorts to the much maligned and condemned method of tight vaginal packing, a pad behind the uterus after anteverting it and a tight abdominal binder.

Prolonged Labour - A significant number of patients are brought to the PHC after prolonged labour. In vertex presentations, the common findings are a dehydrated patient with the cervix fully dilated, the vertex in unrotated or partially rotated occipito-posterior position, jammed in the cavity with large caput, and a fetal heart just audible or inaudible. Often intrapartum infection is present. All that the physician can do at this stage is to apply traction with an axis traction forceps and when repeated traction fails to resort to craniotomy. Genital fistula arising from prolonged obstructed labours are common. It is not for him to resort to Kielland's forceps, a ventouse or do Lower Segment Caesarean Section. Oblique lie with the arm prolapsed poses problems which drive him to despair. If he cannot transfer the patient to his referral hospital, which is

first priority, he will have to do an internal podalic version under open ether anaesthesia if the uterus is well relaxed and there is sufficient liquor in the uterus. This is an operation condemned in modern obstetrics and permissible only perhaps for a second of twins. It is also a procedure which the physician may not have carried out himself during his training period. If the uterus is tonically contracted he has to avoid internal version and deliver by decapitation - a safe procedure in experienced hands. This is also a procedure which he may not have seen performed during his training in a modern obstetric unit. The alternative for him is to deliver her by classical Caesarean section or do nothing and watch the patient rupture her uterus. According to some estimates the incidence of rupture of the uterus is in the region of 1:500 and mortality rate 30%.

The doctor in the PHC has to manage all these problems by resorting to methods condemned in modern obstetrics; but be it remembered that these methods have saved many lives in the past and do save lives even now. Obstetrics in the third world has still to be an art and this must not be forgotten in the training of doctors who are to serve in the rural areas.

APPROPRIATE TRAINING FOR DOCTORS

If this is the type of obstetrics that one has to practise, what is the relevance of our medical curriculum? In modern obstetrics sophisticated techniques are used for assessing the maturity and the condition of the fetus. Fetal heart monitoring in labour is a routine, and no labour is permitted to last more than 12 hours. Cervical dilatation is assessed every hour and a graph obtained. Forceps may be applied only if the vertex is below the level of the ischial spines - a ventouse if a little higher. Caesarean section is freely employed particularly in breech and other abnormal presentations. Internal podalic version is condemned except perhaps for a second of twins. Destructive operations are avoided, except for craniotomy. Classical Caesarean section is not done except under exceptional circumstances.

Is it not wiser to reserve this type of training for postgraduate studies for specialisation and to train the undergraduates in the developing countries in maternal and child care? They can be given an introductory course in the scientific principles of obstetrics but the practical training should take place during the compulsory rotating internship period. This should be done

at a well organised rural health centre, attached to the medical college, emphasising the integrated delivery of maternal and child care and family planning services, and taught in collaboration with the departments of Paediatrics and Community Medicine. It should be the aim to give this training in practical obstetrics within the rural environment. All attempts to build up a miniature modern obstetric department in the field should be avoided. To be effective, the training should simulate as nearly as possible the conditions in a PHC where the physician will be working.

Finally, would it not be opportune to restrict the term 'obstetrics and gynaecology' for specialist training and, for the undergraduates in the third world, let the discipline be 'maternal and child health', until better times dawn when the third world will no longer be there and the practice of obstetrics and gynaecology would have come up to the standard found in developed countries. It is a long haul; but it will come. By that time I guess you would have moved away and will be facing obstetric problems in space and then the moon.

DISCUSSION

CHAIRMAN: Dr. Belmont Williams

Miss Everett: Following on Professor Menon's talk, I feel that the most important attribute of an obstetric panel, or an obstetric practice in a rural area, is optimism. No pessimist would even start to plan a system.

Neither Dr. Barns nor Professor Menon mentioned home deliveries. However, most obstetric systems should include home deliveries, and we should be speaking of four-tier rather than three-tier systems.

The term MCH is interesting since until recently it encompassed 99 percent C and 1 percent M, and only within the last five years has MCH come to mean anything to the majority of the Members of the Study Group.

I have a brief list of the essentials in any obstetric service. First, it has to be tailor-made to fit the locality where it is to be operated, whether this be a rural or an urban area. It must be tailor-made, too, as regards the geography of the area, and take into account contrasts between the Himalayas and areas of good communications. It has to be tailor-made to the geographical pattern of disease, to the culture of the people and to the medical facilities that may be available.

Secondly, it must be based on efficient antenatal selection, so that it need cope only with the unpredictable emergencies. I am being an idealist, of course.

Thirdly, there must be a communication system - and there I am being a wild optimist.

Fourthly, I am sure that it is essential to have guidelines on standard practice in emergency situations. Obstetric emergencies do not occur sufficiently often in any one area for people to have at their fingertips what they should do. If possible, there should be facilities for efficient first aid, and guidelines not only on first aid, but also on referral criteria via a functioning communication system.

Dr. Belmont Williams: In this very important area of research we should begin by doing some research into the training of obstetricians to make them more aware of the needs that exist in the field. I wanted to find out something about maternal mortality in Sierra Leone and I was not able to get the obstetricians to cooperate in completing simple questionnaires.

The problem of home deliveries is an important one. In Sierra Leone, 70 percent of deliveries take place at home, assisted by the traditional birth attendant. To get good services in any area it is first necessary to know what is happening in that area.

Dr. Ebrahim: For some years I taught a course for training professors of child health in the developing countries. I have also attended the course organised by Professor Hendrickse. At both courses I always ask the same question when I talk of newborns: "How many of the students were born inside a hospital?" It is interesting that between 1970 - 1976 all of these would-be professors of paediatrics replied that they had been born in their homes and delivered by traditional midwives. I had the same answers from the students on Professor Hendrickse's course. However, over the past two years the answers have been changing, and more and more of the students were born in hospital.

We are talking about a large section of humanity: three-quarters of the human race live in the developing world. If we look at the statistics for antenatal coverage, which to my mind is the simplest form of health care to organise, they show that not more than 20 percent of pregnant women in the average developing country have any form of antenatal care. These figures come from the cities. In the villages women are looked after by the traditional birth attendant, but with no antenatal care. When we think of organising services, we must think in terms of the grass roots and this has to be nurtured. This means that we have to feed them information and provide training on a regular basis, and we must protect the grass roots from undue professional criticism.

One of the best manuals that I have seen is called "Where There is No Doctor". We must think in terms of training manuals with titles such as "Where There is No Obstetrician" or "Where There is no Paediatrician" and get down to the basics and the primary principles of the kinds of care that can be organised for the villages.

Professor Hendrickse: We are all concerned, one way or the other, with the training of doctors, but, unfortunately, we are now more and more concerned with the training of specialists and super-specialists. The truth of the matter is that in the foreseeable future there will never be enough specialists to meet the needs of the developing countries, and we have got ourselves into an educational trap. We turn out doctors who will have to work as general duty medical officers, yet in the course of their training they are not usually given the opportunity to learn those skills that they will need to handle the woman who presents with a prolapsed arm, a mid-pelvic obstruction, etc.

The concept of specialist obstetrics, specialist paediatrics, in certain developing countries is wrong. What is needed are competent men who can handle 90 - 95 percent of the problems out in the field, and they are not being trained that way because we have lost the means of doing it. Even those medical schools that are developed in the Third World are patterned on the mould dictated in the Western World - which is not the pattern that brought Britain to where it is today. There was a general competence to handle emergencies at all levels. I do not know how we can get out of this trap and meet the real needs of the Third World countries.

Professor Beard: Professor Menon has described a system that must come to an end - i.e. of trying to cope with emergencies in unsuitable surroundings where there will never be sufficient skills. Would Professor Menon comment on how easy it is to get doctors in the country to work in rural areas.

Should we not be using the basic principle of good obstetric care, i.e. preventive medicine, trying to predict when problems are likely to arise, and moving the high-risk cases nearer to the centres of excellence where skilled facilities are available? It is the sort of approach that has been developed by Professor Philpott.

Professor Menon: I believe I have not been fully understood. What I said was that screening and referral were the prime duty of both the medical attendant and the nurse in the rural situation. But, there are numerous instances, when they cannot refer. They may be seeing the patient for the first time and there is no transport available. What are they to do? Are they to plead that they lack the training or the facilities to give that patient any assistance? In such circumstances the obstetrician

in the primary care centre will have to tackle such problems, and these are the very people who should not be given too specialised a training. I would not want them knowing anything of ultrasonics or of ultra-modern technology. What they must learn is the old art of obstetrics - how to use their hands to deliver babies.

Such should get their practical training in the field, in the rural health centres, and not in the obstetrical departments of large city institutions.

Professor Beard: How successful are the referral/screening procedures?

Professor Menon: This is what we want to establish. We have time to do it, but the physical facilities are not available. The training is there - all the sophisticated diagnostics and the highly-specialist skills. But, there is no advantage in having obstetricians who can only cope in well-equipped hospitals. That is totally wrong. The old methods have saved many lives in the past, and I have often used them myself. Yet nearly 70 percent of the obstetricians in the main hospital in Madras have been trained outside. The older obstetricians, like me, will use forceps where the modern obstetrician will do a Caesarean section. This is the difference. Students should not be trained in modern units with up-to-date equipment, but out in the field.

Dr. Belmont Williams: It is very difficult to accomplish anything unless the birth attendants and the obstetricians realise that there may be difficulties in transferring patients. Without facilities such as vehicles and a proper infra-structure, it will be difficult. How are the patients to be transferred? It is all very well training a girl in the village to identify the patient at risk, whether in pregnancy or in early labour, but she can then spend twenty-four hours trying to get skilled assistance to that patient, and what is she to do?

Professor Ratnam: It is very easy for us to sit around a table in London and to talk about training requirements, training and manpower development and the production of manpower to meet the needs of the community. The present system has to be questioned, and some of those who hold the main objections to change are themselves sitting around this table. None of us today is prepared to see the complete revision of our whole

midwifery training programme. We have heard the figures. We have heard of a sub-centre to service 9,000 people, a primary health care centre to service 100,000 people which has a single physician, and that single physician has no facilities to do anything, other than to act as a post office and transmit parcels. Yet, all the Third World countries still copy a training system which requires three years study of basic sciences and a further five years to produce a graduate.

We should be looking at different systems. Perhaps a regimented system such as that used in China would only work in a Communist country, but in China a lot of the services are provided on the spot by people who have received only a minimum of training. In the equivalent of the primary health centre or the village unit, Caesarean sections are carried out by people who have been taught to do them with a minimum of facilities.

When we discuss producing personnel, or providing services at the local level, these are serious worries, and the training programme should be drastically revised with a proper look at the medical education that is being offered in the developing world. Yet none of us would be prepared to do that. We all want to be comparable to everyone else, and our personal pride and our individual interest hamper our doing anything really meaningful.

Professor Philpott: The principle that needs stating is that the person best qualified in the particular community concerned should be trained to do whatever needs to be done in that place, regardless of that person's previous educational attainment. With this in mind we are taking midwives from the rural areas and giving them training for an Advanced Diploma in Midwifery that will enable them to recognise and screen high-risk patients, manage and administer a service in a small hospital with related clinics and perform instrumental vaginal deliveries and Caesarean sections. This training is carried out in a suitable small hospital with no access to sophisticated diagnostic and monitoring facilities.

Dr. Dunn: I have been waiting for the various comments on education. This is the real nitty-gritty of the problem. We take people from upper socio-economic and upper intellectual groups in our cities. We train them in a highly-expensive hospital-based technology, quite inappropriate to the rural situation, and then they are expected - asked - to go and

practice in a situation which is quite alien to their background and quite alien to their experience.

Those who say that obstetrics and gynaecology in most of the world should be a postgraduate subject are absolutely right. Primary care must be taught as a central subject for undergraduates, as MCH. We have got to take people from the community who are used to the community, who enjoy living there and who expect to live there and work there, and only then shall we start to solve the problems of the community. We cannot expect professionals who are selected by the methods we use to select them, and who are taught the same arts and in the same way as previous generations have been taught, to suddenly completely change their ways of life and their expectations. The Participants in this Study Group have been largely selected because they have shown evidence of thinking in some way in this direction. But we must not forget the vast bulk of our colleagues who are not here, and who would find these views completely unacceptable and alien.

The College has an enormous influence throughout the world, particularly in training. The British Journal of Obstetrics and Gynaecology is circulated throughout the world. The College has a tremendous responsibility and an opportunity to influence the way that obstetricians and gynaecologists throughout the world think on this matter, and if the College fails to do that, then the Study Group will do no more than scratch at the surface.

Dr. Armar: We should also recognise the role of the engineer in the subject we are discussing. Professor Menon spoke of the difficulties of referral to centres of excellence and problems of transportation. The good road builder, or the provision of good roads and services can have a major impact on medical standards.

Professor Mokgokong: We are not agreed on what we mean by health care. For instance, where must the woman deliver? Is she to deliver at home or in an institution? When we have agreed on an ideal situation, then it can be modified to meet the needs of the environment. I believe that ideally no woman should deliver at home. Because of the sometimes unexpected nature of the complications a place in an institution should be available for every woman. This is a highly idealistic situation and cannot always be provided.

Then who is to provide the primary care? Who is to do the screening? It does not have to be a medical man. I do not think that the medical schools have done anything wrong. The skills have to be taken down the line to the less-professional person.

We must not accept a situation with no communications. We must tell the authorities that communications are necessary and it is vital that they be provided, be it transport or telephone, communication must be there.

We cannot provide a service to the grass roots without seeing to it that the necessary facilities and the necessary infra-structure are provided. We must agree in stages; first the grass roots, then the next situation. This does not necessarily imply that we should confine ourselves to discussing MCH.

We must remember that a country such as Britain has taken many years to develop, and yet when we have a problem in the developing countries we expect to see it solved in a very short time. I do not think that there is anything wrong with the medical schools except that they need to orientate themselves in such a way that they can turn out the type of man power that will breach the gap quickly. That is what we want. In South Africa, for instance, Community Medicine is a recognised discipline. Primary health care and its provision is now the province of those who have been specifically trained. They are not gynaecologists or surgeons. They are an important type of doctor in their own right. This is something new, to meet a current situation.

Dr. Edström: We have been discussing the irrelevance of many of the services, and the irrelevance of much of the training that is given to people to provide services in the rural areas. One of the reasons for this irrelevance is that the systems now in use in the developing countries have been taken over from the colonial times and from Western developed settings. Training - not only postgraduate obstetric training, but undergraduate training in those countries, training of nurses, of midwives, and even of traditional birth attendants, is all affected by standards of appropriate training set by such bodies as the College.

Change begins at home. The College could play a very important role in trying to reconsider both for the developing countries,

and for the United Kingdom too, whether the standards it sets are always the most relevant.

Mrs. Grewal: Where is the community to go to get the services? In the developing countries the community wants them in the home, and the people who deliver the services in the homes are the traditional birth attendants, and they will be there for all time. In India there are about 600,000 traditional birth attendants whose profession has been handed down from mother to daughter, and from mother-in-law to daughter-in-law, and the only defect has been that these ladies have not been given the necessary training to improve their skills. The result is that they are continuing in the way that they have been taught, without proper observance of the principles of hygiene, or even the tools to perform deliveries properly. We know for a fact that many of the deaths that take place are due solely to non-observance of those principles.

If a programme were to be launched in the developing countries to pick up these women - who are greatly interested in their profession and very skilled - to improve their skills, to upgrade their image, provide them with a kit, and to have them supervised by para-medicals, then most of the community's needs would be met.

The para-medical is the intermediary between doctor and traditional birth attendant. She would be capable of doing quite a few things if she was given the wherewithal, and there, too, we are trying to make an effort. In the teaching of medical graduates there is now a lot of thought about bringing in more of the preventive and the promotional aspects. The reason why we are failing to get these students to go to the rural areas is because the colleges do not put across the proper bias at the time of training.

Professor Pinkerton: Sometimes the developed countries are to be regarded as developing countries just as much as the so-called Third World. Sometimes we in the more wealthy countries give the impression that we know all the answers. It is clear that we do not, and it would be a pity if the Participants were to go away with the notion that we have come to definite conclusions as to the best way to train undergraduates. The tendency now is less and less to emphasise the operative aspects of obstetrics. In my own courses I do not pretend that when the undergraduate gets his first degree it is safe to let him

loose on the community, and not only our community, but much less the communities of the Third World. He requires a great deal more postgraduate education.

However, I can see no reason why countries like India should necessarily take the same view of undergraduate education as we do in the United Kingdom. It may be that the undergraduate in India should be educated so that he can go out into his own community and do the things that are needed of him - those things of which Professor Menon spoke so eloquently.

I hope that everyone would agree that those who are doing the job should be trained to do it properly, and that it should not be given to someone else who is just as untrained, to do it in a different way. As far as the College is concerned, we have to remember that it is not concerned with undergraduate education, which is the responsibility of the universities. The main concern of the College is with postgraduate education. I am quite sure that we would all feel that we should give as much assistance as possible to the very difficult problems that have been discussed in this Session, but as far as the undergraduates are concerned, this assistance would have to be by way of sympathy rather than actual. The responsibility must be turned away from the College, and back to the universities in the countries concerned, which know their own problems. The problems of India are not necessarily the same as the problems of South America, for example, and nor are the problems of South America the same as those of Papua, New Guinea. Each country must make up its mind about its own problems and deal with them on its own ground.

Dr. Naeye: In the three Third World countries where I have come close to patients, the people who can be recruited to be midwives or nurses sometimes pose problems for the patients. Professor Menon pointed out that many patients do not even want to go to a clinic, let alone a hospital, and there may be reasons for this that cannot be overcome just by education.

When one interviews patients sometimes one finds that patients at the community level are frightened. The only person of whom they may be more frightened than they are of the midwife, trained by the university or the clinic, is a policeman. The reason is that a woman who has professional ambitions can in many cases only become a teacher or a nurse, and if she cannot stand educating children she will become a nurse. Then when

she becomes a nurse, she sometimes has underlying habits. She has been traumatised by the urban environment. If one gets close, one will find that she often does things to patients; that patients have some really bad experiences. They are deeply resentful, they are hurt, and they certainly do not want any more. Other than in a real emergency when they are worried about their lives they will want nothing more of the system.

Therefore, in setting up an MCH system, one of the key issues is how to recruit people who, by culture, by compassion, and so forth will be effective and will not be taking this route because it is the only route out of the situation in which they find themselves at present.

Professor Fairweather: Although Professor Pinkerton has said that what is needed from a body like the College is sympathy, I think that more than sympathy is required. What is needed from such a body is understanding, and also action. The same could be said of such a body as the International Confederation of Midwives, or of any other body that represents professionalism. It is clear that the important thing is to make use of the available resources wherever they are and at whatever level they are available. The tendency when professionalism gets into training is to encourage training which does not take place on site or in the immediate surroundings of where the service is to be delivered, or where it will be required, and as a result the trainees move away. First they move away within their own country, and then they move out of their own country to other countries. We need to try to encourage training on site.

I have made two visits to China to look at the provision of services at grass roots level. Some of the lessons are applicable in other parts of the world. They train for specific skills, rather than providing broadly-based training for a large number of skills. This was the basis on which they trained their so-called barefoot doctors. On my most recent visit I was interested to see that they were much on the 'second round', upgrading and adding. The plan now is to add skills, to add training, so that the standard at the local level is being improved all the time.

An organisation of that sort has a lot of applicability. They start by training people from within the community, people who are identified by the community and who are trusted and remain in the community. There is much less movement than we in the Western cultures are accustomed to.

Dr. Barns: Dr. Edström could speak at length about the global programme of research to coordinate different high risk policies in a number of different subjects. This is a very crucial problem of delivery services. The importance of home delivery and home visiting in MCH is one of the backbones of MCH and service delivery systems.

The importance of considering emergency obstetric services has been well demonstrated in some parts of Africa, and where there are good communications and roads, what impact this can make on maternal mortalities. There must be experimentation in the development of manuals and guidelines for people working at the periphery.

The importance of on-the-job training was mentioned by Professor Fairweather, and it could well be a key point in the successful delivery of MCH - continuous, regular, on-the-job training of members of the health team, rather than taking them away and giving them a shot in the arm for a week in some other locus which they come back and forget.

I should also mention - to put the record straight - that in India the primary health care system has already developed a very much more sophisticated concept of the primary health care centre, where they are trying to improve the credibility of maternity services by upgrading one in every four primary health centres by giving special training in obstetrics and paediatrics, or in MCH to the doctors at those centres.

Professor Beard: The College has been responsible for and involved in postgraduate aspects of obstetrics, but it is becoming clear that unless the College has some involvement in the undergraduate aspects, it will miss out on the postgraduate. It is wrong to separate the two. I hope that the College will pay more attention to and take more interest in the undergraduate aspects in the future.

Dr. Berkeley: Professor Fairweather spoke about training on the ground. This is perhaps very well summed up by the need to get back to a problem-oriented philosophy of training. We need to find out the basic data about the localities and the communities in which we are trying to provide services and base training on a problem-solving approach. If doctors and para-medical workers are taught on a problem-solving philosophy, they will be more likely to come up with at least some answer in the emergency situation.

Professor Hendrickse: Stress has been laid on the importance of health education and preventative policies. But these must not be dissociated from professional competence. People do not take note of what is taught them by people who are not competent.

In some ways there is a dichotomy in our thinking and in the way we practise, and I have a rhyme which summarises it.

> When a woman falls pregnant in Zungaroo
> we tell the poor lady what to do,
> about cooking of food and boiling of water
> and not doing things she hadn't oughter.
> For health education will save the nation,
> while curative medicine leads to damnation.
> But, when our wives fall pregnant in Zanzibar,
> and the N.H.S. seems very far,
> we look for a chap with an obstetrical hat
> who has the skill to deliver the brat.

Dr. Gebbie: It is possible for me, as a single obstetrician, to look after between 10,000 and 15,000 patients per year and not come to any harm, and there are many others in a similar situation, and it is not too difficult to do. We are told women want their babies at home. It is a lot of rubbish. Every time I go to any country - and I have been to about ten of them now, although I have stayed in none of them very long - before I know where I am, the women are flocking in their thousands, and I do not even need to go round with a placard saying that there is now an obstetrician in a certain hospital. The word gets around, and if one gives a good service then the people will come and use it. My message to the Study Group is that we know what the problems are, and let us go out and do something about them - and not talk too much!

Dr. Belmont Williams: We have spent some time discussing the two papers. We shall have to re-think the education and training programmes so as to train personnel who meet local needs and conditions. The need for continuous education and continuous training of health care workers has been stressed. One way to do this is to provide manuals which can be used by those working in the field. We have to think about the availability of facilities, such as a road network, so as to ease the transport of patients from the villages to the health centres and the hospitals. More use must be made of available local resources.

THE ORGANISATION OF SERVICES IN AFRICA

Professor R.H. Philpott

In the early stages of discussion in our Study Group, most of us were feeling overwhelmed by the tremendous differences between the various regions of the developing world. However, as we heard of the problems in providing services in India, South East Asia, Africa and Latin America, we became aware that they were similar and that the major differences were in the prevalence of the obstetric conditions seen and the resources available to deal with them.

To avoid the vagueness of generalities, I feel justified in presenting an experience from one region in the developing world. In urban and rural Kwa Zulu in South Africa we are evolving a community maternity service in an area where the obstetric problems are considerable and the resources severely limited compared with other parts of the country. We are currently looking after 26,000 deliveries per year.

FACTORS THAT INFLUENCE THE PLANNING OF MATERNITY SERVICES

Whether a service already exists or has to be pioneered

The first line measurements of efficiency of an existing service are the maternal and perinatal mortality rates. In addition, the economic efficiency of the service is important for both the individual family and for the country, particularly where resources are limited. Consumer satisfaction must be assessed and taken into consideration at each phase of development.

Early in the planning stage in a particular area or region, we have found it wise to stop all but essential clinical work and mobilise all available health care personnel to conduct a detailed analysis of each of these measures of efficiency in a sample of that population. A questionnaire is used to determine where the patients come from, distance from nearest clinic, transport facilities, gestational age at first booking, etc. This type of exercise presupposes a willingness to respond to new and unexpected information rather than preconceived ideas that might have been applicable in another country or region. This

spirit of adventure must be shared, not only by doctors and midwives but also by the administrators who might have a political constituency whose conservatism and even selfishness is deeply entrenched. In addition to surveying the population who are utilising the officially structured service, it is even more important to survey those who go elsewhere for their maternity care, and to learn about the quality of their care.

The financial and staffing resources in the community

If these are maldistributed, as they often are, the authorities will need to be challenged. If the resources are limited, future planning will need to be determined realistically, otherwise the old mistake is made of starting with luxury services for the "haves" and then there is nothing left for the "have-nots". The building of excessively opulent hospitals that cost many millions of pounds to operate annually while many sectors of the country have no primary maternity care are not only examples of bad health care planning but monuments to government immorality.

The geography of the area

Communications and transport are the life lines of a community obstetric service and these will depend on whether the population is urban or rural, the terrain, road links, climate and the distribution of the population and again, the financial resources.

The authorities responsible for the service

Ideally the service should be integrated under one authority. More often it is found that base hospitals are administered by a central government authority and the peripheral clinics by local authority. It then becomes difficult to integrate clinical protocols, policy on patient transfer, fee structures, ambulance services, in-service training, etc. This problem of division of responsibility has to be solved if the service is to be efficient.

Perinatal pathology

The particular perinatal problems of the area have to be determined by an accurate survey. If this is not done and a duplicate is provided of the type of care given in Europe or North America it is possible to miss the major problems. For example, malaria is common in many parts of the developing world and not in others. Also, anaemia not only differs in its

prevalence but also in its type, and it is easy to give prophylaxis that is entirely inappropriate. The widely varying incidence of conditions like cephalo-pelvic disproportion (CPD) abruptio placentae and eclampsia will influence the number of hospital beds required in a region and also the level of midwifery training.

THE OPTIMAL SERVICE

In considering a plan for an optimal service it is recognised that this will not be possible in many parts of the world today. However, it is worth stating the target while being prepared to make adaptations where financial and staff resources prevent the goal from being reached immediately. Also it must be accepted that one model may not be the ideal for every part of Africa, even when resources are available. This is influenced quite profoundly by the type of pathology that is prevalent and by the population distribution.

The model presented is one that operates fairly successfully in a number of countries in Africa today. It has evolved into its present structure by taking into consideration that, in the particular areas where it is employed, the incidence of perinatal pathology is extremely high. In particular, problems of cephalo-pelvic disproportion, abruptio placentae, eclampsia, intra-uterine growth retardation and preterm labour are very prevalent. This makes the point that, if low perinatal mortality rate (PMR) figures are to be maintained in such a community, it will be necessary to include in the structure of the service, personnel with a certain minimum level of training and skill, and also facilities for operative delivery. Where these facilities are not available, modifications to the structure of the service are essential, but it has to be accepted that the same PMR may not be maintained.

Comparison of PMR figures between one country with a particular type of service structure and those of another country with a different service structure, is not altogether valid. It is well recognised, for example, that even within a country the prevalence of the clinical problems mentioned earlier differs remarkably between one tribal group and another. Thus, in a hospital serving the Herero tribe in Namibia, the Caesarean section rate for CPD is only 2%, whereas with similar operative criteria the rate in a hospital serving Zulus in Natal is 15%. Where the incidence of problems, particularly the

mechanical problems of CPD, is low, then it is true that a less sophisticated, and therefore less expensive service, may produce good results. However, it must not be interpreted that the same service will produce the same results in another area where perinatal problems are greater.

The most important fundamental principle is that the service must be designed to reach every member of the community. This would seem obvious, but is not always considered. This principle must not be qualified by the distance of a patient's home to the nearest clinic or hospital nor by her ability to pay a certain fee. This principle requires a new attitude among medical staff and administrators. The doctor must not be limited by the four walls of a hospital, nor must he expect everyone to come to his hospital. If there are some women in the community who are not using the service provided, the doctor and the administrator must accept that there is something wrong with the service, and not with the women in the community.

There is another principle that is not always accepted by the ambitious obstetrician and midwife. It is that the service should grow in proportion to the resources of the country and be directly related to the other medical and community priorities. It could well be however that the energies of the obstetrician will set off an appropriate chain reaction.

This leads me to an issue that some regard as contentious but from my simplistic viewpoint seems fairly clear. In many countries in Africa large development corporations have introduced new industrial and agricultural projects with varying percentages of benefit to the local people. In doing so they have attracted many thousands of workers to move to the development project. In some instances this has happened without the awareness that these workers belong to families and therefore need a health service that caters for more than just 'minor ailments'. In spite of the fact that the development project pays taxes to the government, the government may not be able to provide the health service immediately. During the lag phase between arrival of the new project and the ability of the government to meet the demands of the whole country, the development corporation needs to write into its budget a comprehensive health care system such as land to grow food, schooling, recreation, etc., plus other essential services and facilities.

Further principles for the organisation of an optimal service are as follows:

1) The framework of the service. This consists of a group with a series of satellite clinics surrounding a base hospital. A number of these groups may relate to a central referral hospital, but this expensive hospital should only be considered after the satellite clinics and base hospital are well established. In addition to satellite clinics that do antenatal care and deliveries, it may be necessary in some areas to provide visiting points where mobile antenatal clinics can be held. Where women live a long distance from their clinic, it is important to build a separate mothers' waiting area (MWA). This permits women to lodge in inexpensive accommodation adjacent to the clinic in the last two weeks of their pregnancy.

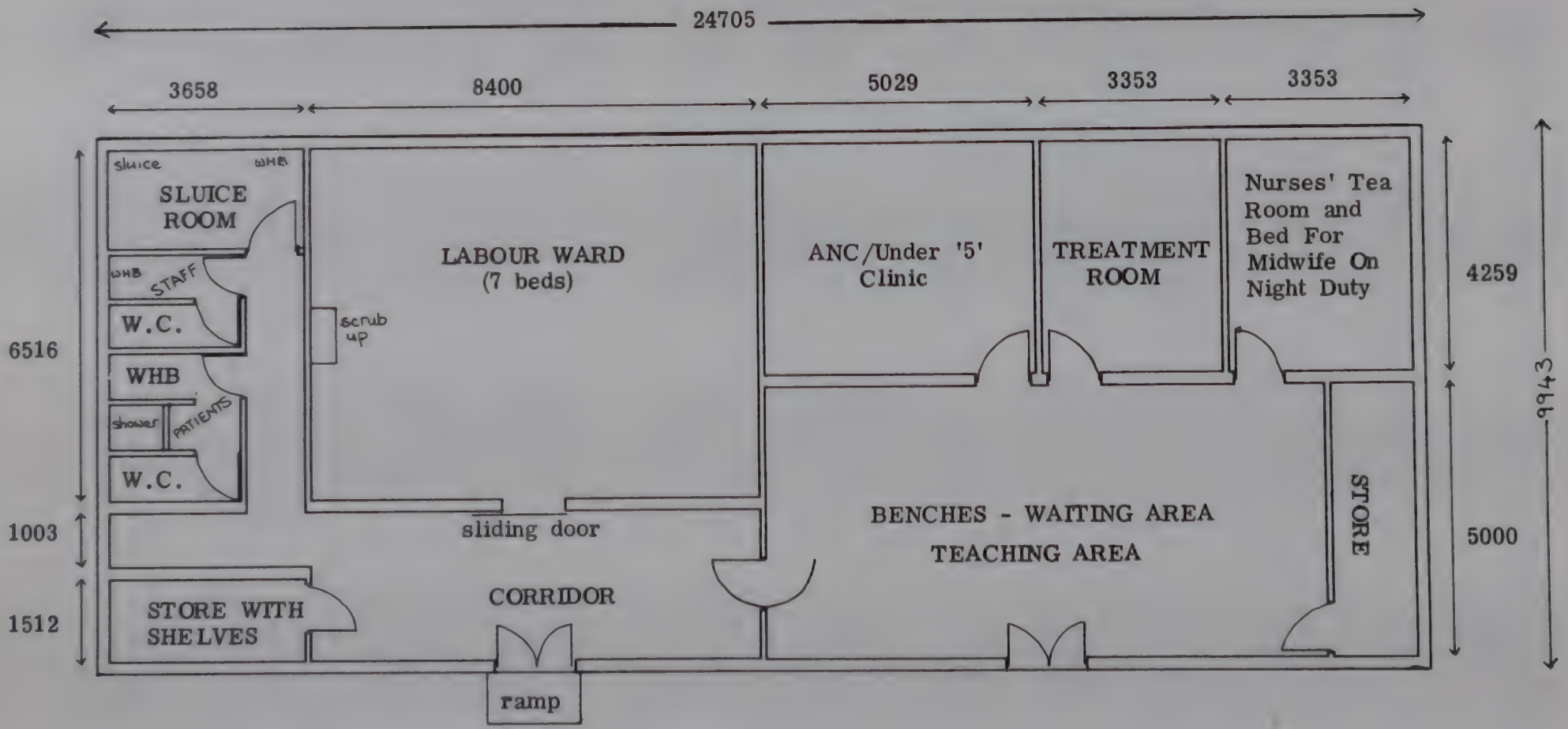
THE CLINIC BUILDING. (FIGURE 1) This should be sited strategically in relation to population density, public transport and other community amenities. In urban areas one clinic can serve ± 12,000 population and rural areas ± 7,500. The design of the clinic should be simple. There are three sections to the building: the outpatient section, the labour ward area and the rooms set aside for the nursing staff. The outpatient section provides facilities for antenatal clinic, family planning clinic and under-fives' clinic. Separate facilities are provided for each of these functions as some mothers will need access to each at one visit.

THE LABOUR WARD. This is one large room with seven delivery beds. The patient is admitted in labour where she will deliver and spend six hours after delivery. She is then taken home and district nurses supervise her pueperium in her home. This covers the hazardous hours of labour and delivery. Normal deliveries only are done in the clinic. High risk patients are transferred to the base hospital prior to labour whenever possible and other problems that arise during labour are immediately transferred. In the population group with whom we are working we expect to transfer 25% of the patients to the base hospital, the majority prior to labour. This figure will be less in areas with a low incidence of pathology.

STAFFING OF THE CLINICS. The clinics are staffed entirely by midwives who are regarded as members of the total service. The grade of midwife employed will depend on local availability.

FIGURE 1

Design of The Maternity Section of a Peripheral Clinic



and fundamental is the principle that we recruit those in the community who are most ready to learn and who are most acceptable to that community. Medical and Nursing Council regulations must make provision for this principle rather than making unrealistic demands for registration.

2) The administrative control of the service. This should come under one authority which is responsible to a co-ordinating national health service. A doctor in the base hospital should be responsible for the medical policy, supervision, continuing education of the staff and quality control of the service. In many areas a highly trained senior midwife has fulfilled this role expertly and become regional obstetrician, so releasing a doctor for other work. We have recently introduced a training programme for an Advanced Diploma in Midwifery for this purpose and these super-midwives will work in our base hospitals.

3) Community involvement. The local community leaders and representatives of the 'consumers' should be involved, or at least consulted in the planning of the service.

4) Perinatal mortality survey. This should be conducted to determine the major causes of perinatal mortality in the area. To be of value this will require accurate pathology studies, information on sociological, nutritional and clinical factors on each patient, and the means to apply statistical analyses. These findings will determine the emphasis in clinical management and training and will also point to the areas of most relevant research.

5) The maternity service should be part of a Maternal and Child Health (MCH) package deal. This will include neonatal care, under-fives' clinics and family planning in addition to antenatal and intrapartum care. In the base hospital there should be adequate anaesthetic expertise and in the referral hospital there should be close links with the pathology service.

6) Protocols of clinical management for all pregnancy and labour conditions. These must be drawn up by the doctor in the base hospital, with clear guide lines defining which high risk patients need transfer to hospital. Standardisation of drug therapy in the clinics must likewise be established by the doctor in the base hospital.

The graphic recording of all the parameters of labour with guidelines to indicate abnormal labour, is of help to the midwife in the peripheral clinic. This acts as an early warning system and enables her to recognise in good time the patient that requires transfer to hospital. It takes a while for the midwife to use these graphic recordings and alert lines, but whatever the standard they attain they are more efficient than when they used the old fashioned methods of recording labour progress.

We have written a manual of practical obstetric management which is used in all our clinics and hospitals. This needs to be updated fairly frequently.

7) Perinatal mortality meetings. Details of perinatal mortality and morbidity for all the clinics and the base hospital should be reviewed at regular intervals (weekly where possible) to monitor the efficiency of the service. This type of perinatal meeting is an in-service training exercise for all members of the staff, and should be accepted not as an option but as part of the week's work. Midwives and doctors attend these meetings, and, where available, paediatricians and pathologists make a very valuable contribution. More usually, one doctor is obstetrician / paediatrician and pathologist combined. It is not possible to reach adequate conclusions without an accurate pathology report on perinatal deaths and placentae.

Where indicated, it is at these meetings that revisions and modifications are made to standard clinical protocols. However, in a new and busy community obstetric service many of the preventable perinatal deaths are due to administrative and organisational weakness that require appropriate adjustment. Also, aspects of cultural beliefs and family life need to be understood and taken into consideration.

8) Transport. There needs to be adequate transport for patients from home to clinic and, where necessary, from clinic to hospital. Furthermore the clinic midwife needs to be able to communicate freely with the staff in the base hospital. This will necessitate an efficient telephone system or a two-way radio system. Unfortunately these facilities will be the last to become available.

9) Records. There must be a simple, retrievable record system that is problem-orientated and common to clinic and

hospital. Simplicity is important for economy reasons and also to ensure that no unnecessary demands are made on the midwifery staff. When patients are transferred from clinic to hospital the up-to-date record goes with them, so ensuring continuity of care with maximum information.

10) Health education in the community. This is essential if the services provided are to be adequately utilised. Positive teaching in health care and nutrition in pregnancy will do a lot to reduce perinatal mortality and morbidity. Teaching and provision for breast feeding is of considerable importance. The bulk of this teaching is done by the midwives.

11) Public information. The government and the public must be kept informed about the state of the service as measured by PMR and must be made aware of the degree to which factors in their control affect the PMR. In most developing countries the difference between a PMR of 25 per 1,000 and one of 75 to 125 per 1,000 is determined by socio-economic factors, nutrition and a well distributed primary health care system. Of equal importance is the recognition that these factors similarly determine the quality of life of the survivors.

This awareness must be reinforced by a strong political will on the part of the participants in a community obstetric service if the present inadequate responses of government are ever to be changed. If we make demands for blood transfusion in our labour wards it is logical that we must likewise be prepared to make demands for socio-economic change. Until the change takes place.

12) Research. Doctors and midwives working in the developing world have a strategic responsibility to investigate the primary causes of perinatal mortality in their area and to evolve more efficient methods of management. Examples from our own area include methods for the early detection and management of CPD, recognition of the amniotic fluid infection syndrome as a major cause of fetal loss and the prediction of premature labour and growth retardation in multiple pregnancy.

Perinatal Results in The Durban Area

The clinical practice based on King Edward VIII Hospital, Durban, serves an urban and semi-rural African population.

The total number of deliveries in the hospital and related clinics in 1978 was 26,000. The perinatal mortality rate in 1975 was 75 per 1,000. With the emphasis on a comprehensive community obstetric service as outlined above, the perinatal mortality rate dropped significantly and in 1978 was 40 per 1,000. There are still preventable perinatal losses which could be avoided even within the present restriction of facilities. Further lowering of the perinatal mortality rate will be dependent on improvement in the socio-economic and nutritional status of the community and the provision of better peripheral hospital services.

Modifications to The Optimal Service

The optimum is not always attainable, particularly when there are shortages of finance and personnel. Alternative methods that become applicable are mainly in the area of primary maternity care and are as follows:

The traditional birth attendant (TBA). Where there are financial and staffing limitations and where a new service is to be expanded or developed, then the absorption of TBAs into the service is an excellent solution. A very effective example is seen in the Central Region of Malawi as organised by Dr. Colin Bullough. There it was recognised that only 30% of the women in the region utilised the standard service. If endeavours were made to attract the other 70%, the resources of the government health services would never have coped. The alternative adopted was to provide the local TBAs with a short 'crash course' in safe midwifery and then officially incorporate them into the existing service. This has worked well and has proved very attractive and, most important, is acceptable to the local community. This part of the maternity service can be community supported.

This is proving to be an excellent interim measure and may well be the pattern for a long time. There are, however, many parts of Africa where there are no TBAs and the person doing the delivery is the young mother's grandmother. She has insufficient experience compared with the TBA and tends to be less 'teachable'.

In some parts of Africa where there are no registered midwives and no TBAs, and it would take too long and be too costly to train standard midwives, a new cadre of birth attendants have been given a short basic training. These are women selected

by the local community. They are therefore acceptable by the community and less likely to disappear from the scene.

Domiciliary midwifery. With the problems of communication and distance we have regarded this as uneconomical of time and energy for our type of community. A number of women can be looked after at any one time in a very simple clinic whereas the domiciliary midwife is tied up for an unpredictable amount of time with one patient.

Lower cost accommodation. It is certainly possible to reduce the cost of building clinics by utilising existing houses or huts or by erecting low cost mud and thatch huts. These can be built by the local community. The saving of cost will permit us to expand our total service.

Visiting points. Antenatal clinics can be held in stores, church or school buildings.

Difference in perinatal aims. This issue can be delicate and sensitive but needs to be faced in every community. For example, in the poorer communities of the world there is a lot of intra-uterine growth retardation particularly in multiple pregnancy. Before considering induction of labour to prevent a macerated stillbirth it is necessary to assess the availability of a neonatal service and the ability of the mother to look after a very small neonate. If it is two small babies, then the problems can be insuperable, and a Caesarean section to deliver these two small neonates may not be in the mother's best interests.

Modification in methods of delivery in the presence of CPD must be carefully considered. Thus, there is a very definite place for symphisiotomy instead of Caesarean section or a difficult or traumatic vacuum extraction. Destructive operations on dead babies instead of Caesarean section can be life saving for the mother.

Conclusion

If we are to progress further towards provision of a better service to the total community, and to the women and children in particular, it must be with open minds that are adaptable, and a spirit of adventure that for us was suppressed by our incomplete earlier education.

The sharing of our experiences in this Study Group has been of such great value that I hope this will be but the beginning of a new era of closer collaboration, and that the Royal College of Obstetricians and Gynaecologists will consider the establishment of a curriculum and qualification in maternal and child health, and provide a resource base for future growth in this most urgent discipline.

ORGANISATION OF MATERNITY SERVICES IN INDIA

Dr. K.P. Shah

This paper reviews the status and mode of administering maternal health services in India and identifies some of the problems encountered in the system of health delivery. It describes the Palghar and Kasa experiments of an altered approach in the delivery of maternal health services at the community level by involving the local community and using appropriate health technology suited to the local conditions.

A PROFILE OF MATERNITY SERVICES IN INDIA

There are more babies born in India than in any other country in the world. Every year 22.3 million out of the 130 million women in the reproductive age experience child birth. In addition a few million pregnancies terminate in fetal wastage. The projected population of India for the middle of 1979 was about 650 million. The birth rate, which declined during 1975 and 1976, had a spurt in 1977 and 1978, and is now about 35. The maternal mortality rate varies between 4.6 in urban and 7.8 in rural areas (1). In the area covered by the Rural Health Unit, Palghar (Maharashtra), the maternal mortality rate declined from 4.5 in 1962 to 2.3 in 1965 (1,2). After the introduction of a primary health care approach in 1972, there were no maternal deaths between 1974 and 1976. Haemorrhage, severe anaemia, sepsis and toxaemia of pregnancy account for 85.3% of maternal deaths in rural areas. Over 71% of these deaths are preventable (3). The data on perinatal deaths in India is limited. In rural Punjab (1965) the rate was 82.7 (4) and in villages around Paldhar (1969) 33.2 (5).

The maternal health services are provided through 5,317 Primary Health Centres (PHC) and 35,274 health sub-centres (6). Each PHC serves a population of about 95,000 in 110 to 120 villages. On average there are 2 to 3 doctors in each PHC, though one-fifth of the PHCs have only one doctor. Eighty percent of the patients attending the out-patient department at a PHC come from an area within a radius of 4.8 kilometres (2), though there are some villages at a distance of 40 kilometres from a PHC. One PHC has seven to eight sub-centres, each staffed by one Auxiliary Nurse Midwife (ANM) who has to provide services for a population of about 12,000 in approximately 15 villages.

In the area served by one ANM, 420 women deliver and about four of these die as a result of childbirth every year. During the same period there will be fifteen to forty perinatal deaths. In practice, an ANM serves only a limited section of the population in her area.

Maternity Services Provided by the Auxiliary Nurse Midwife (ANM)

Some of the ANMs hardly conduct any deliveries. A World Health Organization study of work revealed that an ANM saw one to seven antenatal patients per day at a PHC, whereas her colleague at a sub-centre rarely saw any antenatal patients. About 43.5% of the ANMs were unmarried and 87% were under thirty years of age. More than one third of the nurses working in sub-centres said that they were not happy in their job and frequently mentioned that they were only there because of their service bond with the government. Only 30% of ANMs liked attending deliveries and only 21.5% enjoyed working with mothers and children. All the nurses at the sub-centres preferred clinical work (7).

Maternity Services by Traditional Birth Attendants (TBA)

In practice, the midwifery services in India are rendered by untrained traditional birth attendants. There is an average of two TBAs in a village of 800 to 900 people. TBAs work in urban areas though to a lesser extent than in the villages. In the metropolitan city of Bombay about 10% of deliveries are conducted in homes and many of these by TBAs.

In a study of the midwifery practices in a PHC situated in a backward tribal area it was found that 98.8% of the deliveries were conducted by TBAs. Half the number of the forty TBAs who were interviewed were between 70 and 80 years old and only 5% were between 41 and 50 years old. 37.7% of the TBAs learnt their midwifery skills from their mothers and 25% from their mothers-in-law. 35% had a long experience of 30 to 40 years.

None of the TBAs provided any antenatal care nor advised on diet during pregnancy. They assessed the period of pregnancy by the size of the fetal head and the fundal height. A number of them could diagnose associated complications of pregnancy. Though an ANM covered a larger area and population than a TBA,

50% of them compared with 62.5% of the TBAs had conducted a maximum of 5 deliveries during the previous year. None of the medical officers had conducted any deliveries during the year (8). TBAs managed cases of oblique lie by external cephalic version and carried out breech deliveries by gentle traction on the baby's body and suprapubic pressure for the after-coming head. TBAs did not manage the complications of pregnancy. The ANMs and doctors looked after pre-eclampsia, moderate anaemia and puerperal sepsis but they referred cases of eclampsia, severe anaemia, haemorrhages and obstructed labour to an urban hospital. The post-natal care given by the TBAs and medical personnel was inadequate and unsatisfactory. Neonatal conditions were managed only by the doctors. Family planning services were provided by the medical personnel. The TBAs appreciated the spacing of childbirth but they did not possess knowledge about family planning methods (8).

Maternity Services in Semi-Urban and Urban Areas

An ordinary PHC has six and an up-graded PHC has twelve to twenty beds, although the bed occupancy rate is extremely low. In towns and cities relatively better facilities are available in private and government institutions. The former are more popular but the clientele is restricted to those who can afford to pay. Less than 15% of the deliveries in the country are conducted by trained personnel including trained TBAs.

Care During Pregnancy and Labour and the Utilization of Services

In the rural communities served by the Health Unit at Palghar the maternal mortality rate was 7.8% in unbooked cases, whereas no deaths took place among the women who were regularly attending antenatal clinics (3). In a teaching hospital in Bombay the maternal mortality rate was ten times higher in unbooked patients (1). Similarly the perinatal, early neonatal and neonatal death rates for babies of booked mothers were more than four times lower than those of unbooked mothers. The incidence of birthweight of 2.5 kilogrammes and lower at term was 29.6% in males and 36.2% in females in the group of booked mothers as compared with 47.4% and 54.3% respectively in the unbooked mothers (5).

It is a tragic fact that three-fourths of sick people in India can neither reach a doctor nor a nurse. Two-thirds of the

dying are not attended by any medical personnel. Thus the utility of health services in general and maternity services, in particular, is extremely meagre. It is sad to recognise that even the limited health budget of 3% of the total national budget is not utilised to the fullest extent by the whole population. Many factors contribute to this in spite of a doctor to population ratio of 1:3,200 and an annual graduation of 13,000 doctors. In practice, one doctor is available for 47,500 people in the rural areas (9). Due to long distances, difficult terrain and inadequate transportation, the members of the family do not accept advice for referral as they know that it is not safe to take a woman in difficult labour in a bullock cart to a district hospital at a distance of 100 kilometres. Moreover, they have not only to spend money on transportation, treatment and food, but also lose their daily wages for that period. This is a considerable financial implication for an average family. With heavy household chores like cooking, collecting fuel, fetching water at times from a long distance, washing clothes and looking after the house and family, the women are not inclined to visit health centres regularly. In tribal villages 60 to 80% of the women work either for daily wages or on their small plot of land. They cannot afford to lose income by going for regular check-ups to health centres (10). Low health consciousness, cultural differences between the community and the health personnel and an inclination on the part of the doctors and nurses towards private practice are other factors which stand in the way of utilization of modern midwifery services. There are also socio-cultural problems inherent in the care of women. The heads of families do not give due attention to womens' illnesses or their antenatal care, even though womanhood in India is respected. In a family, the female members are not only neglected by their counterparts, but they neglect themselves. It is common practice for the women to eat last and often they only receive what is left over (9).

Multipurpose Health Workers and Maternity Services

Realising the magnitude of the problem of community health, the Kartar Singh committee recommended the integration of various vertical health programmes with Maternal and Child Health and family planning by introducing a system of Multipurpose Health Workers (MHW) (11). It was expected that these workers would be more effective when given a smaller population to serve and would establish closer contact with the people.

Subsequently, about 76,000 smallpox vaccinators and malaria surveillance workers are being deployed as male MHWs and about 37,000 ANMs as female MHWs. The sanitary inspectors, smallpox and malaria inspectors and lady health visitors have been deployed as Health Assistants. The female MHW is expected to look after health care including Maternal and Child Health care in the entire area covered by a sub-centre. In practice, she is able to take care of 3,500 people. Each of the two male MHWs in the sub-centre area looks after a population of about 6,000. The coverage of maternity services is very poor as the male MHW has a large number of other assignments and the female MHW concentrates more on family planning services. However, the present situation is expected to improve by 1983 when there will be one male and one female MHW responsible for 5,000 population.

THE PALGHAR AND KASA PROJECTS

With a view to meeting the problem of under-utilization of Maternal and Child Health care services and reaching the unreachable, we conducted an operational research study in community diagnosis and management of maternity services between 1972 and 1978 (10,12). Thirty-seven part-time social workers looked after the population of 80,280 people living in 83 villages where 19% of the population were women in the reproductive age group. Emphasis was laid on -

(a) working with a new and viable approach and developing appropriate technology for community diagnosis;
(b) realistic training and orientation of various categories of health personnel and of TBAs in the area;
(c) altered job descriptions with intensified supervision;
(d) involvement of the local community;
(e) provision of timely feed-back through monitoring and evaluation.

Appropriate Technology for Midwifery Care

To reach all the women in their reproductive period, it was imperative to introduce a cadre of part-time local worker. The success of the programme was to a great extent on account of appropriate and improvised technology suited to the local conditions and to these workers. Some aspects of this technology were as follows:

A. A MOTHER'S CARD. In 1973 a simplified, extremely informative and action orientated surveillance card was designed for married women (13). In the Kasa project, 5,663 out of 9,345 married women in the reproductive age of fifteen to forty-five years had these home-retained cards. Their duplicates were kept with the Health Workers. The cards provided information on the reproductive cycle of women that would be helpful for preparing a menstrual registry of the community. Various events of the pregnancy from the second or third month onwards, information on fetal wastage, ill health during antenatal and post-natal periods, risk factors in the pregnancy and other information were recorded. The card also had a graphic recording of the weight during pregnancy. Nutritional and immunizational prophylaxis, treatment of illnesses and health care were made possible through this technology. It was amazing to observe young boys working as part-time Health Workers identifying early pregnancy, preparing an overall menstrual registry of the village and enlisting "at risk" pregnant women in their service area. Thus the mothers' cards provided a comprehensive health surveillance of all married women in a community.

B. TECHNOLOGY OF COMMUNITY DIAGNOSIS OF "AT-RISK" PREGNANCIES (10,14). In order to provide special care for "at-risk" women, a technology was worked out to identify these women in the community. The following were regarded as "at-risk" indicators:

If a woman -

(a) weighs 38 kilogrammes or less before pregnancy, or, weighs 42 kilogrammes or less at 34 weeks of pregnancy
(b) is less than 145 cm in height
(c) is severely pale
(d) has a child from a previous delivery who weighed less than 2 kilogrammes
(e) has swollen legs
(f) is below eighteen or above thirty years of age and is a primipara
(g) has a history of abortion or stillbirth during a previous pregnancy
(h) is thirty-seven years old or above at the time of pregnancy
(i) during previous pregnancy lost her child within one month of delivery
(j) is carrying her fifth or subsequent child
(k) has a history of bleeding during pregnancy
(l) has jaundice

At a given time, between 25 and 35% of pregnant women were "at-risk" in these two project areas. The names of "at-risk" pregnant women were recorded on a specially prepared form and communicated to the nurse, medical officers and community leaders. This approach was very useful as a screening system for referral to sub-centre or PHC. These women were shown to the doctor or nurse when the latter visited their village.

C. TRI-COLOURED ARMBAND FOR MEASURING THE MATERNAL NUTRITION (15). A positive relationship was observed between arm circumference and weight of non-pregnant and non-obese women. Based on this study a tri-coloured arm strip, a simple field device, has been prepared to differentiate normally nourished or mildly malnourished (red band, 25 to 22.7 cm) from moderately malnourished (orange band, 22.7 to 20 cm) or severely malnourished (pale yellow band, 20 to 18.7 cm) women. Our previous study suggests that chronically malnourished women who had a pre-pregnancy weight of 30 kilogrammes or less delivered low birthweight babies (16,17,18), and hence, the parameter of maternal weight or its equivalent in arm measurement is useful in detecting such severely malnourished women.

D. TECHNOLOGY FOR DETECTING ANAEMIA WITHOUT DRAWING BLOOD (14,19). Three bands of different shades of red have been prepared as a tool to help in the community diagnosis of mild, moderate or severe anaemia by comparing the different shades of red with the colour of the conjunctiva. The accuracy of these bands at the level of $\pm$ 1gm of haemoglobin was 83.4%, 78% and 71.9% in severe, moderate and mild anaemia respectively.

E. IMPROVISED KIT FOR THE TBA (14). A small plastic box of 7 x 5 cm containing a sterilised blade, twine, gauze pieces, cotton swabs and tincture of iodine was prepared. This was given to the TBAs in the Kasa project area for their management of labour. The initial cost of the kit was Rs 1.25 (£0.07) and refilling per delivery cost Rs 0.25 (£0.014) (10,14).

F. PIGEONS AS HEALTH MESSENGERS (10,14). Kasa village has no telephones or telegraphic service and so 65 homer pigeons were trained to carry emergency messages in a capsule which was buttoned to their legs. These pigeons took about thirty minutes to fly a distance of 40 kilometres.

Realistic Training and Orientation

The training of TBAs and MHWs was carried out in the vernacular and more than 70% of the training was field orientated. Demonstration, practices and exercises were incorporated in the training. A handbook (20) and manual (21) for MHWs were prepared. A built-in training system was developed through fortnightly review meetings and situational guidance.

Experience in the delivery of midwifery services in a primary health care worker system is limited. The John Hopkins University project at Narangwal and the Indo-Dutch project in Hyderabad (12) have experimented with maternity services in the community with the help of doctors and nurses.

Following the report of the group on Medical Education and Support Manpower (22), the Government of India has adopted an alternative approach for delivering health services, including maternity, through Community Health Workers (CHW). By now, more than 80,000 such workers have been trained and deployed on a part-time basis. Unfortunately, the maternal and child health component is not well represented in assignments or training (23). It is envisaged that in India by 1983 there will be 600,000 CHWs. It is hard to believe that a system of CHWs will replace the time honoured TBAs who have been so well accepted by the community. Hence, the CHWs will have to coordinate their work with that of the TBAs. The management study at the Kasa project demonstrated that, for better implementation of maternity services in a community, the emphasis should be put on -

(a) proper selection of CHWs
(b) realistic training
(c) continuous and vigorous supervision
(d) involvement of the TBA in the health services, and
(e) a simple feed-back system.

The implementation of a programme meeting these conditions coupled with the use of appropriate technology and the involvement of the local community should maximise the utilization of maternity services both in quality and quantity. The task is enormous, but the experiences described in this paper hold a bright future for the services.

References

1. Shah, K.P.; De'souza, J.M.; Sawardekar, D. and Aphele, R.V. Comparative study of maternal mortality in rural community and city teaching institution. Indian J Public Health 1971; 15: 83-91

2. World Health Organization. SEA/24/14 WHO SEARO, New Delhi 24 Jan. 1975

3. Shah, P.M.; Udani, P.M. and Shah, K.P. Analysis of vital statistics from the Rural Community, Palghar 1. Fetal wastage and maternal mortality. Indian Pediatr 1969; 6: 595-607

4. Gordon, J.E.; Singh, S. and Wyon, J.B. Causes of deaths at different ages by sex and season in rural population of Punjab. A field study. Indian J Med Res 1965; 53: 917

5. Shah, P.M. and Udani, P.M. Rural community, Palghar - Perinatal, Neonatal and Infant mortalities. Indian Pediatr 1969; 6: 651-668

6. Government of India. Family Welfare Programme in India 1977-1978 Dept. of Family Welfare, Ministry of Health and Family Welfare, New Delhi 1978

7. Read, M. A Study of the activities of the Auxiliary Nurse Midwife in Haryana, Punjab and Gujarat state, India, WHO SEA/Nur/130 New Delhi, 1969

8. Kolatkar, L. and Shah, K.P. Midwifery services in a tribal block, Kasa. (unpublished observations)

9. Shah, P.M. Rural health services and Community Health Workers. Janata, 3 Oct. 1978, Bombay

10. Shah, P.M. Community participation and nutrition. Assignment Children, UNICEF. 1976; 35: 53-71

11. Government of India. Manual for Health Worker (Male). Vol. I and II Ministry of Health, New Delhi, 1977

12. Integrated Mother-Child-Health-Nutrition-Family planning services models in India. Ed. P.M. Shah. Dept. of Social Welfare, Government of India, New Delhi, 1976

13. Shah, K.P. Surveillance card for married women for better obstetric performance. J Obstet Gynaecol Indian 1978; Dec. 29

WH-110

14. Shah, K.P. Appropriate technology in Primary Health Care for better midwifery services. J. Obstet Gynaecol Indian (in press)

15. Tibrewala, S.N. and Shah, K.P. The use of arm circumference as an indicator of body weight in adult women. Baroda J Nutr 1978; 5: 43-46

16. Shah, K.P. Selection of pregnant mothers as beneficiaries for nutrition supplements. J Obstet Gynaecol Indian 1975; 26: 371-373

17. Shah, K.P. and Shah, P.M. Relationship of weight during pregnancy and low birthweight. Indian Pediatr 1972; 9: 526-531

18. Shah, K.P. and Shah, P.M. Factors leading to severe malnutrition: A relationship of maternal nutrition and marasmus in the infants. Indian Pediatr 1975; 12: 64-67

19. Shah, P.M. and Shah, K.P. Role of the teachers from medical colleges in delivery of health care in rural areas; Development of appropriate technology, training and operational research. In: Delivery of health care in rural areas. Eds. V. Kumer and P.G.I. Chandigarh, India 1978

20. Shah, P.M. and Shah, K.P. Timely health care of mothers and children. 2nd edition. Popular Prakashan, Bombay 1978

21. Walia, B.N.S.; Shah, P.M. and Shah, K.P. Practical Mother and Child Health Care. 1st edition. Orient Longman, Bombay 1978

22. Government of India. Health services and medical education. Report of the Group on Medical Education and Support Manpower. Ministry of Health, New Delhi 1976

23. Government of India. Manual for Community Health Workers. Ministry of Health, New Delhi 1977

DISCUSSION

CHAIRMAN: Mr. J. Lawson

Mr. Lawson: In our earlier discussion we came to a slightly desperate situation where we were asking what we could do. We had Professor Menon and others cornered into asking what is to be done if a patient cannot be referred, and neither the skills nor the equipment are available to do anything about the appalling impending disaster.

As we look at the theme of the Session, The Provision of Maternity Services, we accept that we shall not be able to provide every community with what it needs tomorrow. Dr. Shah emphasised the point very well, implying that all is not well with the programmes, that a careful assessment is needed of what is wrong, together with a training programme, so that eventually better solutions will occur, at dates like 1983 and so on. This is good sense. We should be looking at where we are aiming - as Professor Philpott did. We are talking about the provision of maternity services that we would like to have, and the direction in which growth should occur.

Dr. Bullough: Dr. Shah mentioned that many of the people of India are not ready to attend the health centres that are provided. There are many social and anthropological reasons for that. For example in Africa it is very common for difficulties in childbirth to be attributed to infidelity during the pregnancy, and this is more firmly held for the very young primagravida. For this reason the primigravida will try to deliver at home to avoid the censure of her elders.

The ideal maternity service, as Professor Philpott outlined, is not yet applicable everywhere, and we have to use the traditional birth attendants in those countries where they are considered to be suitable.

Dr. Lawson: I am interested in the use of the term "services we provide for them". It could perhaps be said that the characteristic of all doctors, and, I fear, some senior nurses as well, is to say, "If only they would make use of the excellent services we provide, all would be well". We should look at the services which are not used and ask why a service is unpopular.

Professor Beard: I am impressed by the considerable improvement in maternal mortality achieved as a result of Dr. Shah's programme. Could she pinpoint the important improvement that brought about this dramatic fall.

Dr. Shah: We had a problem in that the women were reluctant to go to the hospitals in the cities. They also lacked the money to go. At that particular time we had a team of students working with us and they used to help quite a lot in taking these patients to the hospital.

Professor Caldeyro-Barcia: When a patient was referred to hospital, would the traditional birth attendant go with her?

Dr. Shah: No.

Mr. Lawson: The traditional birth attendant is often like a fish out of water in a hospital.

Professor Caldeyro-Barcia: But the birth attendant may give the patient confidence if the patient is scared when she gets to hospital.

Mr. Lawson: Some European countries would also find that when a rural domiciliary midwife is transferring a patient to a hospital, she would not be very keen to go to the hospital either.

Professor Galba Araujo: But that is in Europe. Things are different in our societies. The patient has more confidence in the midwife. If the traditional birth attendant comes in with her, she has more confidence in her than in the doctor.

Dr. Belmont Williams: Transport can be arranged when patients at risk are discovered during pregnancy and there is time to transfer them, but what about the emergencies?

Dr. Shah: We cannot solve that problem immediately. Roads cannot be built overnight, and, as Professor Menon has already pointed out, whoever is working on the spot has to manage one way or the other. It is very difficult to transfer a patient in an emergency from a remote village to an institution.

Professor Trussell: One of the devices that Keith Masters introduced into Southern Uganda was to have a pole with a red disc on the top of it that was stuck outside a maternity unit

when there was a patient who needed transfer. Anybody in the community who had a car knew that when they saw this disc, there was a patient in need of transfer. The local administration was prepared to pay a very small sum towards the petrol involved. The programmes that have been mentioned in today's Session have all stressed the value of the recruitment of local personnel to man the programmes. If they can also be selected by the community this will strengthen the service. The village can feel that they themselves have been responsible for choosing the member of their community who will be receiving additional training - however basic - in maternal and child health. This not only gives the community an interest, but also makes possible the continuity that is so extremely important in, for example, pre-natal care. This is where the missions succeed. In many cases where antenatal services and the like are under-used, the local mission hospital may be crowded out, and, skills and facilities apart, this is at least in part due to the fact that when a patient goes to the local mission hospital, she will find the same person there year after year. Government service is so often short of people that it posts staff with such frequency as to destroy what has been built up during the work of a particular individual.

Dr. Gebbie: Both Professor Philpott and Dr. Shah are to be congratulated on 'doing something'. At two different levels of finance people have actually given something - they had some money and they went out and did. That is the greatest contribution we can offer in any country.

Rural people in most communities always have a great deal of difficulty, mainly due to the great distances from essential services, but, fortunately, in many parts of the world, contrary to what we believe, rural people are a great deal healthier than those who live in the cities.

Dr. Evans: In Tanzania the British Government is providing rural maternity services on the basis of regional concentration through an integrated rural development project. We have touched on road maintenance and the problems of transport, and we have touched on agricultural patterns and nutrition in pregnancy, and the importance of education. Add to these a clean water supply, an effective environment, and sanitation, and quite a long list builds up of contributory factors which will greatly improve antenatal care over and above the very excellent system of organisation of services which we have heard from Dr. Shah and Professor Philpott.

Tanzania is relatively privileged in that it has a large number of donors. The only way that it has been able to coordinate the various inputs is to try to arrange that the various donor agencies take various sections of the country. We are at the moment concentrating - in the South-East of Tanzania - on integrated rural development, and are building six new health centres, each of which will have a maternity ward similar to that shown by Professor Philpott. However, along with this - and this is important - there is a road improvement and road maintenance programme. There is a clean piped water supply programme and there is an agricultural programme both in livestock and in grain produce, and also primary education and adult education, all part of an integrated rural development project. In many areas of the world, one has to step back a little bit, not just be a doctor or a health planner, but look at the over all needs of the community.

Professor Hendrickse: I have had the privilege of seeing Professor Philpott's work at first hand, and I noted the Dr. Shah mentioned that she has been involved personally since the mid-60s. In both cases these are people who are dedicated to a concept and have pushed it through, but this does not necessarily reflect what is happening elsewhere. We are talking about services in which people with a special perception, drive and humanity are doing things. There are many examples of this in missionary set-ups in developing countries where there are some marvellous services, but we run into trouble when we try to broaden the base of these to embrace the entire community. Within ten miles of Professor Philpott's situation, medical students from the same medical school are serving communities that have no services, and this is a worldwide problem. It is not restricted to South Africa. It is a problem of implementing on a broad scale. Small-scale projects carried through by dedicated people with vision. In many situations these are held up as examples, and they are bright little lights, but the problem is to extend these to reach the whole community, and this cannot be done without political will.

Mr. Lawson: Could we move one tier up. We have been talking about the basic maternity services in the village, or in the urban slum. Nobody has said very much about what is provided at the district hospital level. If we want to have good grass roots maternity and child health services, there must be a centre nearby with a reasonable amount of expertise to which the clinical problems will be referred. Many doctors working in

the district hospitals have not been taught the simple procedures of putting up a scalp drip in a dehydrated baby, and of doing a craniotomy in an obstructed labour with a dead baby. Can we now discuss what happens in the district hospital?

Dr. Ebrahim: As more and more countries take on programmes of training traditional birth attendants - and this is now happening in several countries around the world - and more and more countries take on the programmes of providing health care at the next tier through medical auxiliaries, there arises the need for MCH co-ordinators. At the district level one can envisage something like 100 - 150 village health workers, about 100 - 200 traditional birth attendants, and 40 - 50 medical assistants or medical auxiliaries. These are the people who need to be supported with regular training, helped with administrative problems, helped with establishing guidelines for referrals, helped with dealing with emergencies on the spot, and, further, helped with establishing a regular dialogue with the community. Such managerial persons or MCH co-ordinators are lacking in most countries, and I think that this will be the next important requirement.

Miss Everett: The time when clinical training for work in district hospitals should be done is in a fairly well-organised internship.

Dr. Dunn: I would like to take up the point raised by Professor Hendrickse on the importance of political will. The small schemes are very important but they have to be followed up by conviction at government level, and by political will and political decisions. It is a great pity that Professor Alvarez-Lajonchere from Cuba has not joined our Group. He would have talked about the organisation of the services in the country over the last twenty years. There they have had political support, and they have mobilised the community, and they have brought a country which was as undeveloped as a country could be to a standard of health care that vies with that of most of the wealthier developed countries. They have done this in spite of having very few economic resources.

To give one example. Having received polio vaccine, every man, woman and child in the country was vaccinated within three days, and then again a month later, and polio disappeared. That is only possible by using the community grass roots organisations - but it was done, for nine million people. They have tackled all their health problems in that way.

Professor Ratnam: Singapore is an island community of 225 square miles and a population of 2.1 million and yet it has an interesting history which demonstrates how much government, and political will, can contribute to services in this setting.

About twenty years ago, there were just two obstetricians, and we had perhaps the largest maternity hospital in the world, delivering 40,000 babies a year. Yet, there were at that time some 37 of what would now be called Maternal and Child Health units distributed throughout our little island. There are 52 of these now. By statute, the Government declared that the Professor of the Department of Obstetrics and Gynaecology in that institution was to become Chairman of the Midwives Board, and it was also made statutory that every midwife, including the traditional midwives of the time - hardly any of whom are left today - had to be registered with that Midwives Board.

Even when we were delivering 40,000 babies and had 570 beds, there was no time when two patients shared a bed and no time when a patient slept on the floor, and there was no time when we were short of beds for patients. This was because of the Government's will to provide a service, and that took priority.

Maternal mortality has come down to about 3 per 10,000 and perinatal mortality to about 18.6 per 1,000. The pattern has changed, but it was not bad when there were just two obstetricians, and the rest of the services were run by midwives and the auxiliary staff, with the obstetrician being available only when called. But then we do not have the problems of transport. Distances just do not exist for us. Because the system was determined by the administration at that time, it did work.

Mr. Lawson: And Singapore also had wealth.

Professor Ratnam: Not at that time.

Dr. Barns: One very interesting question is that of the use of appropriate technologies in solving some of these local problems e.g. the situation where communications were improved by the use of homing pigeons. Dr. Shah did not actually say whether conditions were improved, but she did indicate that homing pigeons were used, and homing pigeons are a very interesting subject because they are deeply embedded in the culture of India, with all sorts of legends, and stories of lovers sending messages by homing pigeons in the Mogul periods, and so forth.

In Northern India, particularly, homing pigeons are used as a sport in most of the villages in the Punjab. They played a great part in the 1971 elections. We tried them out in 1971 on another project although, because they do not operate during the Monsoon, or at night, they have certain limitations. The communications problem in some parts of Nepal has been overcome by the use of the traditional trumpet from hilltop to hilltop. I suppose that in Switzerland in former times they did it by yodelling!

Professor Philpott: In emphasising the element of political will that has been repeatedly highlighted it is valuable to examine what this implies, for some of us have learnt the hard way. Regardless of whether or not we have respect for our administrators there are essential steps that we must take. Firstly, we must have our facts correct and up to date. This requires a survey of existing MCH services (or lack of) with details of maternal and perinatal mortality rates, and then it is valuable to have set up a model service that is relevant and appropriate to the community's needs and resources. If one is to be productive in one's political drive to have the model expanded, it is necessary to have a clear picture of all the other needs in the community - education, communications, housing etc, and also information on how the available resources are being spent. Armed with this accurate information one is then in a strong position to make meaningful proposals. The ensuing follow through may be long and difficult for in some countries the inadequacies in the services are due to administrative self-interest whereas in others they are due to national poverty and many competing demands on the limited resources.

This Session has revealed different approaches to the provision of maternity services. I do not regard these as competitive models but rather they are attempts to meet the differing demands of population size and distribution and availability of transport and communications.

Mr. Lawson: It is suggested that the College could have done more in solving these problems in the world. The College has tried to redress its preoccupation with the problems of maternity services in the British Isles by convening this meeting, the first such meeting held in the College to be devoted to the problems of the developing world. The fact that the College was founded in the 1920s and has taken a few decades to get this far, at least shows that even in the face of pressing local problems it can look outwards.

CHAPTER 4

THE NEWBORN

INTRODUCTION

Dr. P.M. Dunn (Chairman): I hope I may be forgiven if I start by saying how privileged I feel to be here. I am sure I speak on behalf of all the other paediatricians. It has always been my desire to see a team approach to the problems of the perinatal period, and what better example can we have than that of this Meeting, with participants gathered from many walks of life, and having many approaches to the Maternal and Child Health Care problem, discussing how we might start to solve it.

In the first two Sessions we heard something of what the community needs and about the maternity services the profession can provide. Today it is the turn of the newborn baby. What are his needs? It is too easy to think of pregnancy as an end in itself, rather than that the whole aim of pregnancy is to have a living normal child. It should not be forgotton that the fetus at term and the newborn baby are fifty to a hundred times more likely to die than the mother, and, if damaged, will carry a handicap to the end of its life. We cannot ask the baby what he needs. The nearest we can do is to ask the mother. I remember asking one mother in Uruguay some two years ago. She was 44 years old and she had her new baby with her, and I asked her how many children she would have liked. She thought a bit, and then she said "four - as long as they were alive and healthy". I then asked her how many she had had, and she told me that she had had eighteen. She had started when she was 16 and she had been pregnant or breastfeeding ever since. Eight of those children were alive. I think that little story highlights the problem that confronts the whole world.

INFANT FEEDING

Professor R.G. Hendrickse

The subject of infant feeding stimulates little interest and engenders no enthusiasm amongst most doctors engaged in obstetric practice in developing countries. Indeed it must be acknowledged that even in paediatric circles infant feeding was, until very recently, given low priority in undergraduate and postgraduate medical education, regarded with casual indifference in clinical practice and neglected in research. It is my hope that this presentation will at least encourage reappraisal of our individual and collective attitudes to a subject which has important implications for the health and well-being of people in all societies, and which in developing countries has profound and direct implications for child life and health.

As members of the mammalian species we are peculiarly ill adapted for independent existence at birth and our survival and evolution has been dependent on the successful initiation and maintenance of breast feeding of our young. The change from breast to artificial feeding which has occurred in the Western World constitutes a biological revolution and is arguably the most significant change in human behaviour in recorded history. This change can be viewed as a sensible biological adaptation which has been beneficial to mankind as, in those countries in which the change occurred earliest and has been most complete, progress assessed by modern indices for technological, economic and social development has been rapid and sustained. Those who retain reservations about the longterm implications of this adaptation (I include myself in these ranks) tend to be regarded as old fashioned cranks, malignant male chauvinists or worse!

Whatever our conjectures may be about the longterm effects of artificial feeding, in affluent western societies, there is nothing conjectural about the effects of artificial feeding in developing countries. The twin problems of marasmus and infantile diarrhoea are rampant wherever the bottle has replaced the breast and these are measurable in terms of sickness and death.

Pregnancy, parturition and infant care are a continum and obstetricians share responsibility with paediatricians for initiating and sustaining infant feeding. It is most appropriate

therefore that in this symposium we should review facts, concepts, trends and problems related to infant feeding.

Basically we have two options - breast or bottle feeding. It is my hope that what follows will assist in clarifying our responsibilities in exercising these options to meet community needs.

BREAST VERSUS ARTIFICIAL FEEDING

Nutritional Considerations

Human milk is uniquely adapted to the nutritional needs of infants and is superior to any substitute devised by nutritional scientists. Notwithstanding the truth of this statement, hundreds of millions of people the world over have been adequately nourished by artificial feeding from birth. It could be claimed therefore, that if an animal's milk can be adequately "humanised" to meet the digestive capacity and nutritional requirements of infants it can be deemed a suitable substitute for human milk.

The ingenuity of nutritional scientists and the industrial capacity and hygienic standards of the Western World have created conditions in which artificial feeding can be undertaken by anyone of normal intelligence including husbands and fathers. In these circumstances breast feeding tends to be seen as an unnecessary maternal chore encouraged only by those who would deny women the opportunity to enjoy the fruits of their liberation. The minority of women in developing countries who can afford artificial food for their infants will not be dissuaded from adopting this method of feeding by arguments based on subtle differences in the nutrient composition of human and artificial milks. Bottle feeding by the affluent minority confers a status on the practice which encourages those who cannot afford the practice to adopt it. This is where we enter a nutritional disaster area as people who cannot afford these artificial feeds tend to "stretch" their supply by diluting feeds which then do not meet the infant's nutritional needs. The results are failure to thrive and marasmus.

The point I wish to establish is that, given the appropriate economic and social circumstances, artificial feeding can meet the nutritional needs of infants. The tendency which many artificially fed infants have towards obesity may increase the attraction of this type of feeding in some societies, notwithstanding medical opinion to the contrary. When we balance this

against the fact that in rural areas in many developing countries, weight gain and growth start faltering at about 3 to 5 months of age in entirely breast fed infants (1,2,3), then it will be appreciated why communities in these countries may be sceptical about categorical assertions about the nutritional superiority of breast milk over any other infant food.

Infection and Immunity

The role of breast feeding in preventing infection, especially of the gastro-intestinal tract in infancy, is well known and evidence continues to accumulate about biochemical and immunological mechanisms which protect the breast fed infant and which cannot be duplicated by artificial feeding (4).

Table 1

BREAST MILK: ROLE IN PREVENTING INFECTION

(1) Gut colonised by lactobacilli causing low pH

E. Coli cannot grow in low pH

N.B. Even one bottle feed can reverse pH

(2) IgA and other antibodies in colostrum

(3) Lactoferrin binds iron making it non-available to E. Coli

(4) Lysosymes present in breast milk

(5) Macrophages present in breast milk

Table 1 summarises properties of breast milk that contribute to defence against infection. In the generally insanitary environment to be found in most developing countries, gastro-intestinal infection in infancy is a major cause of death in infancy and childhood. Breast feeding is the single most important defence against gastro-intestinal infection in infancy and on this count alone should be endorsed as the only method of feeding for infants in these countries. Asphyxia, neonatal tetanus and gastro enteritis in bottle fed babies constitute three of the most important causes of neonatal death in developing countries. Perhaps we should, as part of antenatal care, teach the fetus to

pray as follows!

> At birth help me to breathe with speed
> Let not my cord be cut by reed
> Please give me breasts on which to suck
> Not feeding bottles filled with muck

We should note, however, that the educated elite in developing countries will resist, and possibly resent, recommendations to breast feed on the grounds of protecting their infants from insanitary surroundings!

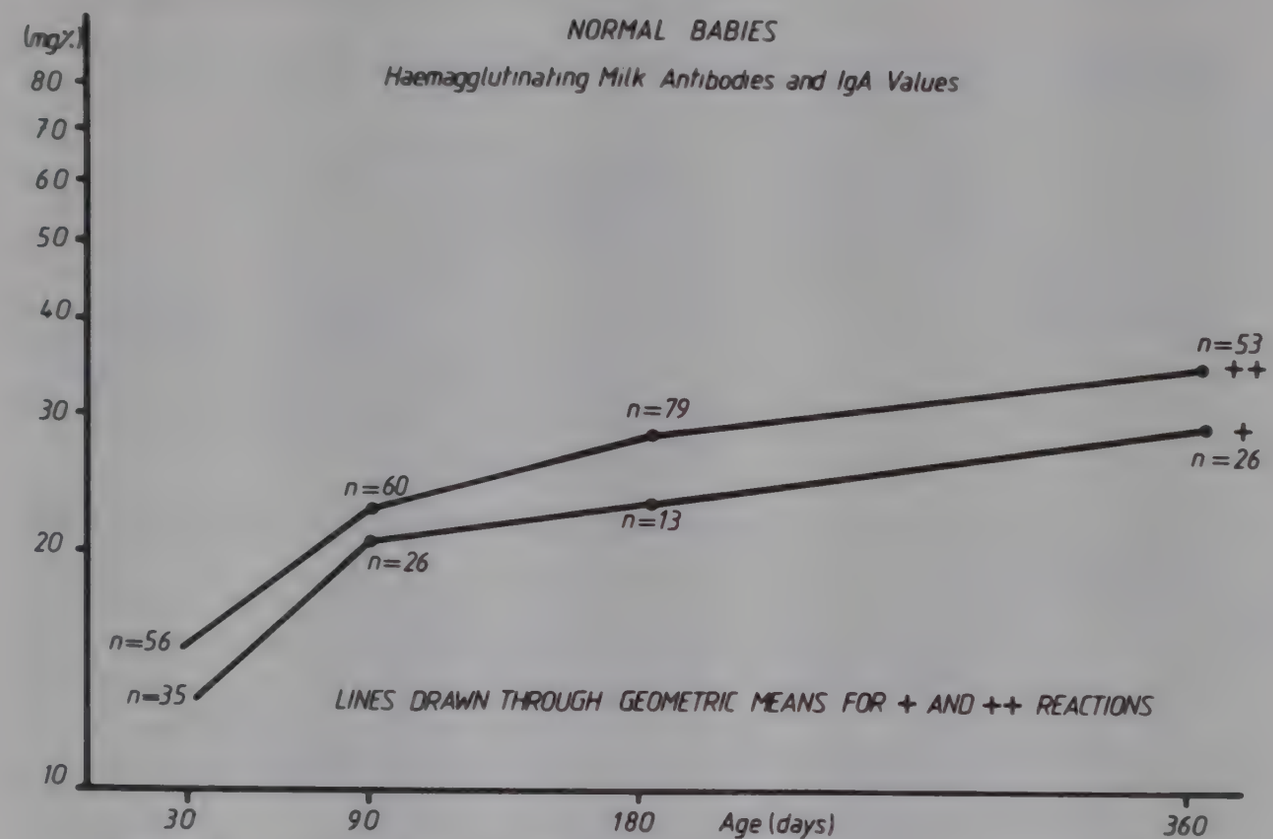
Breast feeding plays an important role in general immunological adaptation to our environment. The newborn infant is almost totally lacking in serum IgA and its dimeric form, which affords immunological protection to mucosal surfaces, known as secretory IgA. This has been likened to an immunological paint that protects from antigenic penetration. Its presence in the gastro-intestinal tract appears to be a crucial factor in the sophisticated mechanisms that permit absorption of food, that contain antigenic foreign proteins, without evoking immunological responses.

Breast fed infants obtain secretory IgA immediately after birth from colostrum, in which it is present in very high concentration, and subsequently in less concentrated form from breast milk. The artificially fed infant is denied this immunological protection while simultaneously being exposed to large doses of foreign proteins. Given these circumstances immunologically mediated disorders may be anticipated in artificially fed infants and in fact do occur, though not as frequently as might be expected on theoretical grounds. Cow's milk protein intolerance causes a wide range of gastro-intestinal problems including malabsorption associated with villous atrophy (5) and may be associated with serious constitutional upsets including fatal anaphylaxis (6). Atopic dermatitis and asthma are other disorders to which the artificially fed infant is very much more prone than its breast fed counterpart.

There is substantial evidence that most artificially fed infants have a continuing antibody response to cow's milk protein and this persists into later life. Milk precipitins can be demonstrated by a tanned red cell technique in a very high proportion of healthy artificially fed infants. In a longitudinal study on normal infants born in a local hospital we have found cow's milk precipitins in 90% of artificially fed infants by one month of age and serial

investigation has revealed persistence of these antibodies to a year of age and later. The levels of serum IgA were found to be significantly higher in infants with stronger antibody responses than those with weaker responses (Figure 1). While this finding has no direct clinical significance, there is a need to ponder on the effects of continuing antigenic stimulation.

Figure 1



Findings in a longitudinal study of healthy infants in Liverpool. Mean IgA levels are higher in infants showing a stronger (++) reaction than those showing a weaker (+) reaction when tested for haemagglutinating cow's milk antibodies

A group of investigators in the United Kingdom saw fit to investigate cow's milk protein antibodies in patients with coronary thrombosis and a group of age and sex matched controls without this disorder (7). Their findings showed definite correlations between the presence of these antibodies and the incidence of, and prognosis in, coronary thrombosis. The significance of these observations in relation to the etiology and pathogenisis of coronary thrombosis remains obscure, but even the suspicion that infant feeding practices may initiate a chain of events that could lead to disaster in later life, should engender a greater measure of responsibility in the way in which we choose to feed infants.

Table 2

MORBIDITY RELATED TO ARTIFICIAL FEEDING

ARTIFICIAL FEEDING:	ASSOCIATED MORBIDITY
Infective:	Gastro enteritis Other infections, e.g. R.S.V.
Metabolic:	*Neonatal tetany *Hypernatraemic dehydration
Allergic:	Gastro-intestinal cow's milk protein intolerance Atopic Dermatitis Asthma Anaphylaxis
Nutritional:	P.C.M. in developing countries *Greater susceptibility to Rickets *Greater susceptibility to Scurvy *May get Pyridoxine deficiency *Folate deficiency

* Rare with the more sophisticated "humanised" modern preparations

Table 2 summarises morbidity which is related to artificial feeding and includes some metabolic derangements and nutritional deficiencies which do not occur with the more sophisticated "humanised" preparations but are associated with the use of cow's milk and unmodified dried milk powders.

Sudden infant deaths (cot deaths) tend to be less common in entirely breast fed infants than in others (8), but a direct association between infant feeding practices and the etiology of this tragic event is open to question. There are, however, a number of possible mechanisms of sudden death in artificially fed babies which rarely, if ever, occur in entirely breast fed infants. These are listed in Table 3.

There is suspicion and speculation about the role of infant feeding practices in the etiology of a number of diseases which are of considerable importance in the modern world including obesity (9), hypertension (10), and coronary thrombosis (7,11). Child abuse and baby battering which constitute a "new" paediatric syndrome of growing importance is very likely to be, in part at least, related to artificial feeding (12). Table 4 lists conditions mainly occurring in adult life, that may be related to infant feeding practices.

Table 3

SUDDEN INFANT DEATHS:

Possible mechanisms in artificially fed babies which are rare in breast fed infants

(1) Anaphylaxis

(2) Hypernatraemia

(3) Protein overload: high amino acid levels stimulate insulin release causing hypoglycaemia

(4) Increased susceptibility to infection generally and to some specific pathogens, e.g. Respiratory Syncitial Virus. Breast milk has specific anti-R.S.V. activity

Table 4

DISEASES OF OBSCURE ETIOLOGY THAT MAY BE RELATED TO INFANT FEEDING PRACTICES

Atherosclerosis	Coronary thrombosis
Obesity	Ulcerative colitis
Hypertension	Psychiatric disorders

I make no apology for the speculative nature of this Table. The revolution in infant feeding that has occurred in this century is a massive, unplanned and uncontrolled experiment in human biology and we have been negligent in not giving consideration to infant feeding practices in our investigation of diseases of obscure etiology and pathogenesis that have increased in prevalence in this century.

Psychosocial Considerations

Attitude of mind and post-natal mother-baby bonding are two of the most important factor which determine the method of infant feeding adopted by mothers. Women reared in societies where

breast feeding is the norm, who during pregnancy are surrounded by people who know about the practice and encourage it, who after birth have their babies in continuous close contact and who are free of any social restrictions about where, when and how often to feed their infants are usually successful breast feeders.

Contrast this with the young pregnant woman, isolated from her family in suburbia where she is often alone and afraid, who attends an antenatal clinic where breast feeding is never mentioned or may even be discouraged. She delivers her baby in a hospital where immediately after birth the infant is taken from her to a nursery, where it is given a bottle feed at its first sign of complaint. If she wishes to breast feed her wish may be ignored, discouraged or even disparaged. Should she nevertheless persevere her confidence wanes as her baby fails to show satisfaction after feeding at times regulated by hospital routines rather than baby's needs. Assuming that she has the strength of purpose to overcome these initial set-backs and goes home breast feeding, she now finds it is not acceptable, in our sexually liberated modern society, for a woman to feed her baby in public, and even at home feeding must be private and certainly not in the company of guests. Under these circumstances, breast feeding becomes intolerable for most mothers who switch their infants to a bottle with relief and gratitude.

Biologists and veterinarians have long been aware of the natural phenomenon of bonding which occurs within very specific time limits after birth between mothers and babies. Close mother and baby contact which includes exchange of signals through all senses, is essential for successful bonding. Interference with this phenomenon in animals leads to failure of suckling, rejection of offspring and death of the young.

As a profession we have given little consideration to the phenomenon of bonding in man and many practices which have developed in obstetric services imply a tacit rejection that the phenomenon has any relevance in human biology. Recent observations on mothers and babies from the immediate post delivery period and for months afterwards, provide convincing evidence of bonding in humans and the relevance of this for successful breast feeding (13). I am personally convinced that bonding is of fundamental importance for breast feeding and future successful mother-baby interaction and that interference

with this process has untoward effects on parent-child relationships that may be irreversible. The casual separation of babies from their mothers in the immediate neonatal period when bonding occurs, which is now so widely practiced, will I believe, in time be viewed with the same disdain that we now have for obstetric practices that preceded the germ theory of disease.

Economic Considerations in Third World Countries

Women who have been educated and trained in industrial, commercial or professional fields find ready employment and make an important contribution to national development but child bearing and child rearing make demands which may be incompatible with their jobs. Usually allowances are made for child bearing but no allowance is made or concessions granted for breast feeding. In these circumstances most women curtail breast feeding to permit them to meet the conditions of their employment. They find it economically advantageous to return to work while delegating care of their infants to others. The same holds true, but to a lesser extent, for women employed in lowlier capacities in commerce and industry. But, the economic advantage of artificial feeding diminish rapidly as one descends the pay scale. For the vast majority of the population artificial feeding is totally uneconomic but, notwithstanding this fact, the practice is spreading. What then motivates these communities to adopt a practice which is so counter productive? The short answer seems to be that they have been wittingly or unwittingly misled.

The activities of milk marketing firms have come under critical scrutiny recently and these organisations have been castigated for their role in seducing infants from the breast to the bottle (14). There can be no doubt that agressive salesmanship has accelerated the trend towards bottle feeding and that commercial practices in some countries fall outside the bounds of ethical conduct. It would be both foolish and dishonest, however, to lay the blame exclusively on the commercial world and absolve ourselves from responsibility. The educated elite in general and the medical and nursing professions in particular have influenced trends towards artificial feeding by adopting this method of feeding for their own children and thus conferring on it a status associated with progress and affluence. Every obstetrician who has separated newborns from their mothers into

nurseries, patterned on western lines, and every paediatrician who has separated a sick infant from its nursing mother has encouraged the drift to artificial feeding.

Efforts now being made to bring a greater measure of responsibility and humanity into the practices of milk marketing firms must be supported as strongly as possible but the suggestion that a total ban be imposed on the marketing of artificial foods in developing countries is unrealistic, unless this forms part of a much wider reorganisation of society, revision of priorities in national development and provision by the governments concerned of free milk for infants who cannot, for one reason or another, be breast fed.

CONCLUSION

The biological advantages of breast feeding over artificial feeding are I believe, indisputable but the social and economic advantages are open to question within the framework of modern western society. Attempts to reverse the present trend toward bottle feeding in developing countries and to re-establish breast feeding in western societies can only succeed if communities are convinced of the advantages of breast feeding and are prepared to make adjustments to their life-style and organisation of services that will facilitate the practice.

Education about breast feeding will have to proceed actively and rapidly if people are to be convinced of its importance and this must start in the medical profession where many remain indifferent to, or ignorant about, the subject. Due emphasis must be given to the subject in under and postgraduate medical education if future doctors are to be more effective than we have been in promoting the practice. Our Health Services will require reorganisation to promote breast feeding as follows:

Health Service Reorganisation to Promote Breast Feeding (15)

1. Preparation for motherhood must be viewed as an integral function of health care systems. Emphasis to be given to:-
   (a) Nutrition of pregnant and lactating women
   (b) Preparation for breast feeding
   (c) Initiation and continuing breast feeding

2. In Obstetric Units:
   (a) Facilitate close mother-child relationships
   (b) Actively discourage removal of infants to 'Well Baby Nurseries'
   (c) Artificial feeding on prescription only and not at nurses' discretion

3. In Paediatric Units:
   (a) Breast fed babies admitted must not be separated from nursing mothers

If women are to participate in national development and be expected also to breast feed then appropriate facilities and conditions of service must be devised for nursing mothers as follows:-

Facilities for Working Mothers who Breast Feed (15)

1. Provide facilities at places of work for breast feeding
2. Modify working day to allow breast feeding
3. Extend maternity leave to allow for breast feeding requirements
4. Provide appropriate allowances for payment to nursing mothers

These are but a few of the implications for any society that puts a premium on breast feeding and seriously hopes to promote it as the norm for infant feeding. With best intent in the world this will neither be speedily or easily achieved and in the interim there will be many millions of infants who will continue to be dependent on artificial milks. It is of vital importance that the needs of these infants be seen as a shared responsibility of the community, the medical and nursing professions and the baby food industry, and that joint action be taken along lines that will meet the highest ethical considerations.

References

1. Janes, M.D. Physical Growth of Nigerian Yoruba Children. Trop Geogr Med 1974; 26: 389-398
2. Whitehead, R.G.; Rowland, M.G.M.; Hattan, M.; Prentice, A.W.; Miller, E.; Paul, A. Factors influencing lactation performance in rural Gambian mothers. Lancet 1978; ii: 178-181

3. Lauber, E. and Reinhardt, M. Studies on the quality of breast milk during 23 months of lactation in a rural community of the Ivory Coast. Am J Clin Nutr 1979; 32: 1159-1173

4. Ciba Foundation Symposium 42 (new series) General discussion: The advantages of breast milk. In: Acute Diarrhoea in Childhood. Elsevier-Excerpta Medica, North Holland 1976; 171-179

5. Fontain, J.L. and Navarro, J. Small intestinal biopsy in cow's milk protein allergy in infancy. Arch Dis Child 1975; 50: 357-362

6. Freier, S. Paediatric gastrointestinal allergy. In: Clinical Immunology-Allergy-in Paediatric Medicine. Scientific Proceedings of the 1st Unigate Paediatric Workshop. Ed. J. Brostoff. London: Blackwell Scientific Publications 1973; 107-121

7. Davies, D.F.; Johnson, A.P.; Rees, B.W.G.; Elwood, P.C. and Abernethy, M. Food antibodies and myocardial infarction. Lancet 1974; 1: 1012-1014

8. Emery, F.L. Unexpected death in infancy; Early recognition of the 'at risk' situation. In: Recent advances in paediatrics, No. 5, Ed. D. Hull. Edinburgh: Churchill Livingstone 1976; 203-219

9. Shukla, A.; Forsyth, H.A.; Anderson, C.M. and Marwah, S.M. Infantile overnutrition in the first year of life; a field study in Dudley, Worcs. Br Med J 1972; 4: 507-515

10. Dahl, L.K. Salt and hypertension. Am J Clin Nutr 1972; 25: 231-244

11. Osborn, G.R. Stages in development of coronary disease observed from 1500 young subjects. Relationship of hypotension and infant feeding to aetiology. Collogues Internationaux du Centre National de la Recherche Scientifique 1968; 169: 93-129

12. Prescot, J.W. Body pleasure and the origins of violence. Bull Atom Sci 1975; 31: 10-13

13. Sosa, R.; Kennell, J.H.; Klaus, M. and Urrutia, J.J. The effect of early mother-infant contact on breast feeding, infection and growth. In: Breast Feeding and the Mother. Ciba Foundation Symposium 45 (new series) London: Elsevier-Excerpta Medica, North Holland 1976; 179-193

14. Jelliffe, D.B. and Jelliffe, E.F.P. Human Milk in the Modern World. Oxford University Press 1978

15. International Pediatric Association: Recommendations for action programmes to promote breast feeding. Bull Int Pediatr Assoc 1976; No. 5: 27-31

NEONATAL PROBLEMS IN THE DEVELOPING WORLD

Professor N.O. Bwibo

In the developing world there are many neonatal problems with a high mortality and morbidity rate yet these countries have limited neonatal facilities and resources. The few professional health workers available tend to gravitate towards the urban areas whereas the majority of babies are born in the rural areas. Many of these babies die from preventable conditions and for every recorded neonatal death that takes place in the hospital there are several that die at home unattended by health personnel.

A high birth rate of 40 to 50 per 1,000 population is common in the developing world and this contributes to a rapid population increase which over-runs the health facilities. The limited facilities available are therefore overcrowded. The birth interval is usually short and many babies are born to young mothers below the age of eighteen years or to women of high parity. Each of these factors are known to increase the prevalence of low birthweight.

There are no reliable statistics and hence it is difficult to plan for the care of these babies. Registration of births and deaths is incomplete. The available figures are estimates of results of limited surveys of hospital data.

FACTORS THAT DETERMINE HIGH NEONATAL MORTALITY RATES

Hygiene at time of Delivery

Home deliveries are conducted by Traditional Birth Attendants (TBA) or female relatives in most unhygienic environments. The houses are overcrowded with siblings and other relatives, thus increasing the risk of infection. In some countries the TBAs are now being instructed in hygienic methods of delivery, but in other countries there is no effort in this direction. Babies delivered in maternity units may be no better off as these units are congested and therefore very difficult to keep clean. After a normal delivery, babies are discharged within 48 hours only to face the same environmental conditions as the home deliveries, and they may never be followed up.

Low Birthweight

According to Jelliffe (1) the incidence of low birthweight in percentages is 4.5 in Sweden, 4.8 in New York and 6.9 in Birmingham (United Kingdom), compared to 34.7 in Calcutta (India), 36 in Colombo (Sri Lanka) and 21.3 in Ibadan (Nigeria). Tibrewala (2) has shown that whereas one-third of newborn babies in India as a whole are of low birthweight, in the rich class of Madras the rate is as low as 14%. The factors associated with a high incidence of low birthweight in the developing countries are maternal malnutrition, infections and anaemia, multiparity and young maternal age, socio-economic status and short birth interval.

Neonatal Infections

Resulting from the obstetric complications, infections in the neonate are frequent and cause a high mortality. The major types of infections encountered are skin sepsis, septicaemia, umbilical sepsis, meningitis, ophthalmia neonatorum, gastro-enteritis, pneumonia and tetanus neonatorum. Tetanus results from the custom of applying cow dung or medicinal herbs to the umbilical cord. These infections can be prevented by simple inexpensive methods such as a proper routine for cutting and tying the umbilical stump, provision of facilities for attendants to wash their hands and also a reduction in the number of staff handling the infants. These methods reduced neonatal mortality considerably in the village of Imesi (3). Immunization of antenatal mothers with tetanus toxoid has been shown to be effective in preventing tetanus neonatorum. Ideally three doses should be given, the last dose given as near to the time of delivery as possible.

Other Perinatal Problems

Birth trauma and asphyxia can result from precipitous labour, labour interfered with in the village by the giving of medicinal herbs or prolonged labour due to cephalo-pelvic disproportion. The resulting cerebral birth trauma may either cause immediate death or mental retardation in the survivors. A number of babies are lost as a result of bleeding from the umbilical cord which has not been tied properly. This should be preventable.

The incidence of congenital malformations is similar to that in the developed countries but the chances of a neonate surviving

with a major congenital defect is low. There are seldom facilities available for surgical correction and such a child may succumb to infection. In some cases the parents conceal such babies at home to avoid social embarrassment.

Neonatal jaundice is very common in some countries, but the causative factors are poorly understood. Some are due to ABO blood group incompatibility, which is a severe disease in Kenya and other parts of Africa. Others are due to G-6-PD deficiency but there are still many other cases which are unexplained. Kernicterus occurs in some babies with hyper-bilirubinaemia because of late recourse to medical help and lack of fresh blood for exchange transfusion. Rhesus blood group incompatability is however uncommon in Africa, as only 4% of the population are Rh negative. Neonatal infection should be considered in all jaundiced babies as this is a not uncommon cause of jaundice.

Other high-risk babies are those whose mothers die after child-birth and hence are not breast fed and also the babies of unmarried young mothers, a problem which is rapidly increasing in many parts of Africa. The unmarried mother may not be in a position to provide care for her baby as she may be unemployed and staying away from her extended family. In the past the extended family used to absorb these babies. When they are not socially absorbed they are often battered, thrown on the road-side or even in pit latrines.

CONCLUSION

The neonatal death rate is still very high and in some parts of the developing world is up to 40 per 1,000. In Guatamala in 1959 to 1964 it was 64.4 per 1,000, and in rural India between 1957 and 1959 it was 77 per 1,000 while for a comparable time in the USA it was 18.2 per 1,000. Between 50 and 75% of deaths occur within the first seven days of life (4).

Low birthweight and immaturity significantly contribute to the high neonatal mortality. Tibrewala (2) stated that the overall neonatal mortality for his part of India was 43 per 1,000 but that of low birthweight was 125. The neonatal mortality for term babies was 37 per 1,000 while that of preterm was 5 per 1,000. Babies weighing 1 to 1.5 kilogrammes have little chance of survival while those weighing less than 1 kilogramme have no chance.

References

1. Jelliffe, D.B. Prematurity in Obstetrics and Gynaecology in the Tropics and the Developing Countries. Eds. J.B. Lawson and D.B. Stewart. 1967

2. Tibrewala, N.S. A paper read at IPA Seminar on Prenatal Nutrition in Ankara, Turkey. Oct. 1978

3. Morley, D. Paediatric Priorities in the Developing World. Butterworth & Co. Ltd. 1973 p76

4. Simmons, G.B.; Smucker, C.; Misra, B.D. and Majumder Patterns of causes of infant mortality in rural Utter Pradesh J Trop Pediatr 1978; 24: 207

DISCUSSION

CHAIRMAN: Dr. P.M. Dunn

Dr. M. Chan (Discussion Opener) - The speakers have brought to our attention the tremendous problems that face the care of the newborn. We have been told of the need for neonatal care, for example, in South America, where there is an increase in neonatal deaths. But the other health problems are so enormous and wide-ranging that in the developing countries neonatal care has been given a low priority. Complicated technology is something that we tend to associate with neonatal care. Somehow we have got it into our minds that if the neonatal care provided in the special care units in the developed countries is so highly sophisticated and difficult, then it is certainly not for us, and therefore we must abandon neonatal care. We have to look through these problems to see what our priorities are, and what the aims of neonatal care are.

Can we employ simple measures which will have good results in the developing countries in the care of the newborn?

By training traditional birth attendants and other people in hygiene, in the cleanliness of the umbilical cord, in the avoidance of dangerous customs in cord-dressing, in the immunisation of women in pregnancy, we can control tetanus. How feasible are these methods?

I believe that the obstetricians have a very important role to play. As Professor Hendrickse has highlighted, in the preparation for motherhood a mother is easily taught during her antenatal care. Also we need to educate nurses and midwives in the importance of the newborn, and the care of the newborn.

Dr. Dunn: Dr. Chan has rightly criticised over-complicated technology. I should like to describe one technology that I met in a developing country - this will warm Professor Hendrickse's heart. I met a doctor who carried a hammer with him in his belt, wherever he went. I asked him what this was for, and he told me that whenever he meets a mother bottle feeding her baby, he takes that bottle and breaks it ceremonially with a hammer. If the mothers cannot breastfeed he prefers that they use a spoon. There is absolutely no way in his part of the world

that a bottle can be kept clean and sterile, it is just a death trap - which is why he carries the hammer.

Professor Caldeyro-Barcia: How soon after birth would Professor Hendrickse recommend that breastfeeding be started? Two years ago we started to put the baby to the breast immediately after the birth, and this is part of the early interaction between mother and neonate. We have found that this has increased the rate of breastfeeding in our population. The father, too, has an active participation. He has been educated to realise that this will not cause any deformation of the mother's breasts and that it will be of great help for the child. We have found that if the baby starts to suck a few minutes after being born this has some biological influence in the promotion of breastfeeding.

Professor Hendrickse: I am quite sure that the sooner the baby gets to the breast, the better. The speed with which this is accomplished after delivery is determined by the circumstances of delivery. Ideally the baby can be put in close contact with the mother at the breast immediately after delivery, and this initiates a process which goes on. The bonding period is critical. It is certainly within the first twenty-four hours, and I think that it starts immediately after delivery. I would say that Professor Caldeyro-Barcia's observations on the resultant increased success in breastfeeding are quite correct on biologicial grounds.

I agree completely in the involvement of the fathers. The involvement of the fathers, the education of children at school, the preparation of boys and girls to responsible parenthood, etc., are factors that society must take into account if it regards breastfeeding as the optimal way to feed its infants.

Professor Caldeyro-Barcia: Would Professor Hendrickse recommend breastfeeding at the demand of the child or at fixed times? We are doing it on demand, and this has also improved the results in getting more women to breastfeed.

Professor Hendrickse: This was implicit in my comments. It is best to allow the child to regulate its needs. In fact, sensible demand feeding quite soon settles down into a routine. The child does not cling to the breast all the time. The child dictates the pace, and providing the mother's lifestyle is such that the child can make the demands, then demand feeding is best.

But, unless the rest of society is prepared to accept that it must adjust to the infant's needs there will be problems, and the baby will be forced into a predetermined pattern of behaviour.

Dr. Dunn: When demand feeding is allowed then to begin with it will feed much more often than the clock-fed baby. It usually feeds two hourly, short feeds and frequent feeds.

Dr. El Hakim: Community needs in the developing countries encourage breast feeding. It is cheap, available on demand, invariably sterile, and it keeps or maintains the mother bond. Are there any factors that should limit the length of breastfeeding?

Professor Hendrickse: If possible, complete breastfeeding should persist for the first three to four months of life, not just for nutritional requirements but to allow the maturation of the specific functions of the GI tract in relation to immunological stimulation, protection, etc. The recommendation of the International Paediatric Association is that, if possible, additional items to breastfeeding should not be introduced into the diet before four months of age in any society, and in societies where there is an extremely high risk that the additions should be even longer. However, that must be balanced between what the mother is putting out and what the baby needs. This is where obstetricians have a very important role in looking at nutritional requirements in pregnancy and lactation, and how best to meet these so as to ensure an adequate output of breast milk to meet the baby's requirements.

Professor Philpott: Does Professor Bwibo feel that in a teaching hospital in a developing country where health personnel are trained, who will work elsewhere in the country, one should purchase expensive equipment for a neonatal nursery, or should one try to set up a model of how best to treat a neonatal in a peripheral, less developed part of the country? I have a second question. As obstetricians, should we be giving tetanus toxoid to antenatal mothers, or are the mothers who come to antenatal clinics the ones whose babies never get tetanus, so that it would be wasted?

Professor Bwibo: I am sure that different people will have different answers to the first question. There is the role of prestige. Governments may well say that their teaching hospitals should be equipped to the standard that is considered "respectable". On the other hand, there may be a lack of technicians to maintain

the equipment, in which case effective use of sophisticated equipment would be limited. Some hospitals have incubators only for the very small babies, and the nursery is so arranged that the babies are divided into categories: A, B, C, and D. B, C and D are just warmed up to the extent that I described.

Regarding tetanus, I should say yes. The obstetricians should be providing immunisation against tetanus to expectant mothers in those areas where the incidence of tetanus is very high. We know very well that the treatment of neonatal tetanus has a very low success rate, with mortalities as high as 70% even in the teaching hospitals. Where anti-tetanus has been given during antenatal care, this has greatly reduced the incidence of neonatal tetanus.

Dr. Dunn: The final tragedy is to see babies with tetanus being ventilated for weeks when the money and the effort has not been found to prevent them getting tetanus, which could be done for a thousandth of the cost.

Professor Harrison: In the circumstances in which Professor Bwibo practises, what are the factors he will consider before saying that babies are fit to go home. Does he, for example, say that a baby must attain a certain weight before it may be sent home from hospital, and if so, what weight?

Professor Bwibo: The weight at which we discharge a baby is 2.2kg. The babies in the incubators are those who may not be able to maintain temperature on their own. As soon as a baby can maintain its temperature and is feeding properly it will be moved from the incubator to the warmer rooms. If they are at the breast, we may discharge them even before they reach that weight. We have discharged babies weighing as little as 1.8kg, but able to feed at the breast - actively. If we waited until they weighed 2.5kg we should have too many babies in the nursery who were healthy and active, and waiting only to gain weight.

Dr. Belmont Williams: What, if anything, should be given to the baby before lactation is established? Some paediatricians feel that hypoglycaemia in the first day or two of life may be a problem.

Secondly, has Professor Hendrickse any experience of the various beliefs that are associated with breastfeeding? This is

very important in Sierra Leone. In past years, after delivery, a mother has gone to live with parents or other relatives whilst she is breastfeeding. She will stay away for a year, eighteen months, sometimes even two years, before returning to her husband. But in these days, with the changing socio-economic patterns, not all the women go back. They stay with their husbands, and sexual intercourse is resumed; but it is believed that if the baby continues to be breast fed while the mother is having intercourse, it will contact kwashiorkor, and in consequence, the baby is taken off the breast. I am inclined to believe that the kwashiorkor is a consequence of the baby's being taken off the breast. There is another strong belief that if a woman has lost two or three babies during early childhood, and these babies were breast fed, then the cause of death is said to be 'bad' breast milk. It is virtually impossible to convince women in this situation that the milk was not the cause of their babies' deaths.

There are people who prove to the mothers that breast milk is bad. They have several methods of doing this. They will squeeze breast milk into a container and add the juice of certain herbs. The milk will curdle, and the fluid that is left will be poured off. The curdled milk will than be shown to the mothers as dead maggots.

In another instance, some milk will be poured into a spoon, and a large black ant will be put into the milk. If the ant comes out of the milk alive then the milk is good, but if it dies, then the milk is bad. It is a serious matter. In these circumstances the babies will not be breast fed, and taking the baby off the breast in these conditions is tantamount to signing their death warrant.

Professor Hendrickse: I am glad that Dr. Belmont Williams raised the question of beliefs in relation to breast feeding. Nobody in any society can be interested in the subject without being aware of the enormous importance of these beliefs, and in the modern age, when there are people who want to discourage breast feeding and promote artificial feeding, they will come up with additional stories that are almost like the ju-jus mentioned by Dr. Belmont Williams. They will point out that in many countries a mother's breast milk contains enormous quantities of DDT. They will point out that certain steroids in breast milk can cause jaundice. They will point out that drugs given to the mother can, and do, influence the baby, and that

leprosy bacilli can actually be seen in the fat in breast milk. They can go on in this way, and, depending on how people want to be convinced, they will be convinced.

The point that Dr. Belmont Williams has raised is of fundamental importance and it cannot be ignored. In situations where traditions are changing, where people who have traditionally abstained from sexual intercourse by custom are no longer doing so under the changes that have occurred in society, we must be mindful of these changes, and we must take such measures as will make it possible for these people to breastfeed within the context of the changes that have occurred in society.

Referring to the further question on what the baby should be given, nature has provided infants at birth with an overload of fluid, and there is no great danger of dehydration. The big danger in the newborn period is overload with fluid rather than underload. For hypoglycaemia, everybody will agree, give glucose water. It will not do the baby any harm, and it will probably do it a lot of good, especially in those conditions and circumstances where we know that hypoglycaemia is likely. Glucose water is not antigenic and it will meet the baby's immediate requirements.

Dr. Naeye: The first thing that Professor Hendrickse said related to helping the baby to breathe with speed. Nobody has dealt with that issue. If one goes from one location to another in Africa, one finds dramatic differences in the maturity of the infant lung at birth. For example, in the Zulus in Durban, lung maturation is slower by far than it is in U.S.A. blacks or in U.S.A. whites. By contrast, in Addis Ababa, fetal lungs are much more mature than in any group in the United States at a very early gestational age. That means that respiratory distress in Addis Ababa will almost always be due to congenital pneumonia, whereas in Durban it will almost always be due to hyaline membrane disease - far more than any place in America.

This raises issues about environmental factors in pregnancy that regulate fetal lung maturation, particularly mother's diet. I shall go no further, other than to say that we should think about this, and look at the specific diets eaten by the various groups in the Third World and their effects on lung maturation, and there is a very good chance that this is where that answer lies.

Secondly, I have already said that Addis Ababa fetuses die with regularity during labour of infections that would never affect

infants in the United States, or even in Durban. Those living in Ethiopia are Semitic and Hamitic people, and Hamitic and Semitic peoples elsewhere in the world do not have the problem, thus it raises the issue of some specific defect, whether it is zinc or something else, in the fetuses, that makes them particularly vulnerable. We should be giving priority to trying to find out why these infants cannot stand up to these very mild infections, since it is quite possible that something rather simple could be found to correct the problem.

Professor Galba Araujo: I should like to come back to breast-feeding. As soon as breastfeeding is started, it stimulates the pituitary to release more oxytocin, and this greatly improves the contractions of the uterus.

Secondly, for the baby to take the breast at the beginning, when it is soft, is much easier for the baby than for it to wait twenty-four or forty-eight hours.

Thirdly, engorgement of the breast, or such infections as mastitis, are very rare when breastfeeding is started early.

Professor Bwibo: The medical problems that cause mortality and morbidity in Kenya - and this would be equally applicable to other developing countries - are the infections. Sepsis of the cord is extremely common; it can lead to septicaemia, which kills many babies.

The role of tetanus in killing babies has been highlighted, and there has been some discussion on methods of prevention. There was a specific question on the use of vaccination, but we should also stress that the most significant method of preventing tetanus in the cord is the hygiene of the person assisting in the delivery of the baby. We have to reach that person and to educate him or her - in most cases it is her - in the best method of tying or cutting the cord - as was highlighted by Dr. Shah in an earlier Session.

Our women have many babies so that a few might survive. If we can provide good health care for the newborn then there will be no need for the mothers to have large numbers of babies.

Finally, there is great need to train health personnel. The auxiliary who provides the bulk of the care should be the person who receives most attention.

Professor Hendrickse: I hope that out of this meeting will come a re-endorsement of obstetrical responsibility and involvement in the wellbeing of the neonate. In very practical terms, before we come to equipment, in the planning of obstetrical activities and services, provision must be made for neonatal care, so that the mother can have the baby with her. Also, in the apportionment of the staff in obstetrical units, the nurses delegated or fully in charge of neonatal care should not be those who are incompetent to do anything else, but should be those who care, those who know, those who wish to teach, and those who believe in mother-baby interaction and breastfeeding in particular. In Ibadan we had good cooperation, which I think is essential, between obstetrician and paediatrician, and we took as our priorities those things that we thought important. We went for suction, simple suction and tubes, as our mainstay to help with respiratory problems and we did not, with the resources available to us, go in for artificial ventilation. It would have made too big demands. We made residential facilities available for mothers so that mothers who had been discharged could continue to stay in the hospital compound and go on breastfeeding their babies. We made facilities available to keep babies warm, and to provide oxygen when necessary, and we did not go much beyond that, and as long ago as 1964 our survival rate for 1,000gm babies was 20-25 percent. Most important, we never discharged a baby, irrespective of weight, whose mother was not competent to feed that baby, and bottle fed babies were discharged at a much higher weight and only after the nurses were satisfied that the mother had learnt how to artificially feed that baby, under their instructions. To do otherwise was to sentence that child to more than a 50% chance of death soon after discharge from hospital.

Finally while we have responsibilities at the broader community level, I do not believe that as medical people we can close our eyes to our scientific responsibility in evaluating and defining new problems which may require specific solutions. Nobody would have known about Vitamin K and its value in haemorrhagic disease of the newborn if that problem had not been studied. In relation to the problem in Addis Ababa, it may well be that specific attention to, say, zinc in the diet, though it will not solve the general problem of malnutrition, could have a significant impact on infection. Certainly defining the problem of G 6 P deficiency and neonatal jaundice in a number of countries, including countries where the situation was thought not to occur, had a significant effect on obstetrical practices, paediatric

practices and child survival. While preserving our responsibilities to the community in general, we also have responsibilities as scientists. In the developing world, we are the only people with training and know-how to be able to pick up and find specific problems, and hopefully find solutions to them.

Dr. Dunn: I shall try to summarise what we have heard this Session and the lessons we have learnt.

- The training of paramedical staff, health auxiliaries in the care of the newborn.
- The training of the mother, particularly. No one is more interested in the care of her baby than she herself.
- Breastfeeding.
- Care of the cord.
- Warmth. This needs emphasising again.
- The keeping of mother and child together.
- Nutrition.
- Immunisation against all the preventable diseases. It is tragic to see therapy still taking priority over prevention in many countries, particularly the developing countries, and all the resources being used to treat diseases that are preventable.
- The need for adequate nutrition. Again education comes in. The use of vitamins.
- Hygiene, particularly at the time of weaning.
- It is no good having babies survive the perinatal period if, when they are weaned, they die of gastro-enteritis. In most of the world, something like 10% of babies will die in the second half of the first year of life from gastro-enteritis. This is a tremendous public health problem. Sewage disposal, water, safe water supply, and so on.

Much can be done by teaching paramedical auxiliary staff, and the mothers, about early emergency treatment of gastro-enteritis, with oral rehydration with electrolyte and sugar solutions. It is simply done, cheaply done, and most effective where it has been introduced.

CHAPTER 5

FAMILY PLANNING

FACTORS INFLUENCING ACCEPTANCE OF FAMILY PLANNING IN GHANA

Dr. A.A. Armar

Ghana sponsored a government National Family Planning Programme (NFPP) in 1970. The launching of the NFPP saw a marked accentuation of the organised promotion of family planning which had hitherto been pursued as a low keyed activity by two private organisations, the Christian Council of Ghana which started in 1961 and the Planned Parenthood Association of Ghana which was founded in April 1967. A considerable amount of effort has thus been expended in Ghana since the early 1960s in disseminating relevant information and providing contraceptive services throughout the country, in a bid to promote the acceptance of the concept and practice of family planning as a desirable lifestyle, both for the promotion of maternal and child health and also as an adjunct to the country's socio-economic development efforts.

GEOGRAPHY OF GHANA

Ghana, which was the first Sub-Saharan African colony to achieve independence lies in the lowlands of West Africa. Its total area of 238,000 square kilometres divided into four major geographical regions, running from north to south - the savannah; the wet semi-equatorial forest; the humid south equatorial rain forest and the coastal scrub and grassland (Ghana's driest region).

Ghana's cocoa, timber, industrial diamonds, bauxite, manganese dioxide, coffee and gold make her potentially one of the richest countries in tropical Africa, with a per capita income of $262 in 1970. Her resources and wealth are not evenly distributed, however. Cocoa and timber, which accounted for 78% of the country's exports in 1970, come from the south, where the population is denser, more urbanised, better educated, and wealthier. The northern savannah region produces no cash-export crops. Its population is engaged mainly in subsistance farming. Development efforts are concentrating on raising the standard of living in the less developed areas and on expansion and diversification of agriculture.

THE POPULATION OF GHANA

Size and growth patterns

The latest census, taken in 1970, placed the total population of Ghana at 8.6 million; the estimate for 1975 was 9.3 million. This represents a more than fourfold increase since 1920 and an increase of more than 2 million since the 1960 census. Such growth reflects an average annual rate of natural increase of around 2.6% between 1960 and 1970, with an average crude birth rate of around 50 and an average crude death rate of around 20 per thousand population per year over the decade (1,2).

According to the provisional estimates of the 1970 census, Ghana's crude birth rate continues to be approximately 50 per thousand population, while the crude death rate is 17 to 20 per thousand. These figures reflect almost no change in the birth rate but do reflect some decline in the death rate over the ten years since 1960. The average national infant mortality, which varies widely among social strata and between rural and urban areas, has been estimated at 160 per thousand live births, while maternal mortality is placed at about 10 per thousand deliveries. Life expectancy at birth is 47 years for males and around 50 years for females. The total fertility rate is estimated at 6.9 to 7%. The average household size is 5 persons. The number of immigrants reported at 12.3% of the population in 1960 has probably been reduced greatly since the Aliens Compliance Order of 1969 and is unlikely to be of much significance in the foreseeable future.

Age Composition and Marriage

Nearly one half of the population (47% in 1970) is under the age of fifteen. Fifty percent are between ages 15 and 64, and thus can be counted as employable, and 3% are over age 65. The dependency ratio is a relatively high 102 nationwide, with the rural dependency ratio significantly higher than the urban ratio (107 versus 83).

Marital rate and age at marriage have not been investigated thoroughly in Ghana. It is generally accepted however that in Ghana virtually all females (97.7%) have been married by age 25. It is estimated that the mean age at marriage for females is 17.7 years. This figure reflects variations according to

religion, however, with the mean age at marriage for females at 18.9 years among Christians, 15.9 among Muslims, and 16.6 among traditionalists (3).

Rural/Urban Distribution

Although still primarily rural, Ghana's population is gradually becoming more urbanised. About 71% of the population, according to the 1970 census, live in rural areas in concentrations of less than 5,000 people, while 29% live in urban areas with a population of 5,000.

Literacy

In 1970 the proportion of the total population that had attended school passed the 43% mark, indicating a more than tenfold increase over the 1948 recorded level of about 4%. More males than females attend school: 53% of males and 35% of females aged six years or over have been to school at some time. Attendances are increasing faster in urban than in rural areas, with the greatest growth among the urban male student population. Primary education has expanded rapidly since enactment of the Education Act of 1961, which made elementary education free and compulsory. Growth of primary education has not been matched, however, by corresponding increases in the middle and secondary components of education. Only a small proportion of students can continue their education to the secondary level.

Economic Status

Most Ghanaian females are involved in small scale trading and cottage industries such as weaving and pottery. While women exert considerable influence in the market place, no more than 3% of the economically active women work in the public or private sectors of the economy. Thus, almost all women who participate in economic activity do so within the traditional household setting.

Future Trends (4)

A number of different population projections have been made for the next quarter century. It is generally assumed that mortality is declining as a result of improved education, nutrition, and health services. It is estimated that life expectancy

at birth increased by 2.5 years per five year period during the 1960s and will increase by 3.5 years per five year period (or 0.7 years annually), during 1970 to 2000. The total fertility is expected to continue at its present rate of 6.9 to 7% until 1985, but various projections assume different figures after 1985. If fertility remains constant throughout the period the population is expected to reach 22.4 million in the 1995 to 2000 period. If the fertility declines linearly to 3% by 2000, a population of 18 million is expected. The latter is the assumption used by the National Family Planning Programme and entails a doubling of the population between 1970 and 2000.

Attitudes Towards Fertility

Since 1963, a number of sample surveys on family planning knowledge, attitudes and practices have been conducted. The most recent reported results are those of 1968 (4). The salient conclusion of that survey was that Ghanaians favoured large families and that their interest in family planning services was centered on their perceived benefits of spacing births. For example, more than 68% of those interviewed in 1968 wanted large families (7 or more children), with even higher percentages among rural couples with small families and those with lower levels of education and income. Less than 20% of the respondents had any family planning knowledge and only 10% of the sample knew about modern methods. Less than 3% were practising family planning at the time of the interview, the majority for spacing purposes or because they had just had a delivery.

Population Growth and Socio-Economic Development

Unmanaged population growth can adversely affect the nation's capacity to develop. Among the key areas affected by changes in population size are the need for social services, the structure of the labour force, per capita income and agricultural self-sufficiency. Consequently, hope for socio-economic gains in these areas must be assessed in terms of the influence of population growth.

Organised Family Planning in Ghana

In March 1969 the government published an official document "Population planning for national progress and prosperity". The statements spelled out seven central elements in the government's policy to encourage voluntary planning of family

size and the deliberate reduction of the rate of population increase:

1. A national policy and programme to be developed as organic parts of social and economic planning and development activity.
2. The vigorous pursuit of further means to reduce the still high rates of morbidity and mortality.
3. Specific and quantitative population goals to be established on the basis of reliable demographic data and the determination of demographic trends.
4. The government to encourage and itself undertake programmes to provide the information, advice, and assistance for couples wishing to space or limit their reproduction. These programmes to be educational and pursuasive and not coercive.
5. Ways to be sought to encourage and promote wider productive and gainful employment for women; to increase the proportion of girls entering and completing school; to develop a wider range of non-domestic roles for women, and to examine the structure of government perquisites and benefits and if necessary change them in such ways as to minimise their pro-natalist influences and maximise their anti-natalist effects.
6. The government to adopt policies, establish programmes, guide and regulate the flow of internal migration, influence spatial distribution in the interest of the development progress, and reduce the scale and rate of immigration in the interests of national welfare.
7. Provision to be made to establish and maintain regular contact with the development and experience of population programmes throughout the world and through intensified relationships with international public and private organisations concerned with population problems (5).

The Policy provided for the establishment of a Ghana National Family Planning Programme (GNFPP) which was to provide information and services to enable Ghanaian couples to voluntarily space pregnancies and limit the size of their families to levels commensurate with their economic circumstances and, in the process, help slow down the rate of the growth of the population. The programme was formally launched on the 22nd May 1970.

Prior to the establishment of the GNFPP it had been feared that while the advocacy of family planning for health reasons and

and as a basic human right would receive a wide measure of acceptance in Ghana, the promotion of family planning for demographic purposes was likely to generate a considerable amount of controversy and resistance. Among the reasons for the anticipated resistance the following are still operative in some quarters:

a. most of the long established cultural practices are pro-natalist in their appeal, desired family size is still high and there is little motivation for family planning in view of the prestige of large families.
b. the overt problems attributable to pressure of numbers appears conveniently remote and many people have the illusion of the economic value of the vast expanses of uninhabited land they see around. To them the threats posed by population growth trends is imaginary.
c. in the face of growing nationalism after years of colonial rule, there has been a tendency for many to view the substantial foreign assistance for family planning and related activities, especially from the western sources, with suspicion. The charge is often made that such assistance has the sinister ulterior motive of keeping the numerical strength of the population down to ensure the perpetuation of the discredited colonial system, apart from corrupting the youth and destroying long cherished cultural practices.

The Ghanaian environment was thus seen to pose a formidable challenge to the GNFPP; this no doubt explains the somewhat aggressive and sustained educational and motivational approaches which have been adopted by the programme since its inception, and the varied contraceptive delivery systems now operative in Ghana.

The available evidence suggests that in spite of the constraints there has been a wide measure of acceptance of family planning in Ghana both at the national level and also at the individual family level. The measure of success achieved and the factors which may have influenced the gains recorded have been assessed by:

i) an examination of the service statistics of the GNFPP;
ii) an examination of findings from family planning knowledge, attitudes and practices studied by researchers;
iii) an examination of the findings of the family planning component of the Danfa comprehensive rural health and family planning project (6,7).

At the national level, factors which have influenced the acceptance of family planning include:

i) The realities of Ghana's demographic trends revealed by the post-1960 population census studies, which clearly indicated the need for deliberate action to curb rapid population growth to offset its undesirable consequences.
ii) The emergence of the military government of the National Liberation Council (in 1966) which could adopt a pragmatic approach to the population problem, unfettered by considerations of political expediency. It was during this period that major decisions were taken in relation to the evolution of the Population Policy and Programme, a development which reflected a clear departure from the pro-natalist stance of the previous government.
iii) Facilitation provided by government action and groundwork for continued promotion of family planning and related activities in Ghana by ensuing governments.

At the individual family level the influencing factors are:-

i) Age, with younger age groups (25 to 29) being the proponderant group accepting family planning methods, a fact probably reflecting the greater susceptibility of this group to change processes.
ii) Infant mortality; declining infant mortality influences acceptance.
iii) Education and socio-economic status influencing acceptance positively and also influencing a switch from the use of less effective to more effective contraceptive methods.
iv) Effective communication; with traditional modes of communication being more effective with rural folk and mass media approaches making a greater impact with urban folk (8).
v) The availability of health facilities which give assurance of child survival (9).

The findings of the Danfa comprehensive rural health and family planning project demonstrate the positive influence of the comprehensive health services - education, availability of services, accessibility of services, quality of services, the provision of a wide range of contraceptives and costs on the acceptance of family planning in a rural Ghanaian setting.

References

1. Caldwell, J.C. Fertility differences as evidence of incipient family decline in a developing country. Population Studies 3, No 6, July 1967.

2. Gaisie, S.K. Dynamics of Population Growth in Ghana Accra-Tema. Ghana Publishing Corporation, 1969.

3. Aryee, A.F. The influence of nuptiality on population growth. In: Interdisciplinary Approaches to Population Studies. Eds. A.S. David et al. Population Studies Monograph. Legon: University of Ghana, 1975

4. Gaisie, S.K. and David, A.S. Planned Fertility Reduction in Ghana: Structural Inter-ralationships, Potential Socio-Economic impact and Magnitude of the Needed Programmes. University of Ghana Population Studies No 6, Legon, 1974.

5. Government of Ghana. Population Planning for National Progress and Prosperity. Accra-Tema: Ghana Publishing Corporation, March 1969.

6. Nicholas, D.D. (i) Family Planning outcome and Impact Danfa Project. (ii) Fertility and Contraceptive Behaviour Danfa Project. Nimeographed Reports at Review Meeting of Project January 1979.

7. Neumann, A.K.; Sai, F.T. and Dodu, S.R.A. Danfa Comprehensive Rural Health and Family Planning Project: Ghana - Research Design Environ Child Health 1974; 20: No 1 39-54.

8. Bame, K.N. A Study of Traditional and Modern Media for Communicating Family Planning in Ghana - Institute of African Studies, Legon 1974.

9. Nukunya, G.K. and Twumasi, P.A. A Study of Traditional Attitudes towards Health, Disease and Family Planning in Four Selected Ghanaian Communities. A research monograph prepared for P.D.P. Legon 1975.

PROVISION OF FAMILY PLANNING SERVICES IN INDIA

Mrs. S. Grewal

I propose to describe briefly the demographic background of the Indian Family Planning Programme and then to trace its evolution to the present point. Over the years, the programme has acquired new dimensions and now forms an integral part of the country's total effort to improve the living standards and styles of its people.

Demographic Background

From the point of view of population, India is the second largest country in the world, next only to China. India's population on 1 March 1979 was estimated to be 647 million. A temporal comparison reveals that the Indian population grew from 238 million in 1901 to 361 million in 1951 - an increase of about 40% in half a century. In the subsequent two decades, 1951-1971, the population grew by 50%.

It is important to consider the manner in which the Indian population has grown into its present size. International migration being almost negligible, the growth has been influenced only by fertility and mortality trends. The steep increase in population is attributed directly to a steep reduction in the death rate. Thus the annual growth rate increased to a level of 2.25% in the decade 1961-1971, compared with 1.26% in the decade 1941-1951. The options that were open to the western countries for development were not open to India when it entered the era of rapid population growth. Poverty and lack of development compounded the problem of a high growth rate. Family planning, which had a wider acceptance in the higher socio-economic strata, had only a limited appeal amongst the poor and backward classes of the society whose life conditions often drove them to produce more children.

Mainly as a result of family planning in rural areas and partly due to the effect of modernisation in urban areas, a gradual decline in the birth rate has been taking place in recent years. It is estimated that in 1977, the birth rate per thousand was 32.9 and the death rate 14.7, yielding a natural growth rate of about 1.82%. These levels indicate that India is in the middle stage of demographic transition.

The current population problem of India, namely, a large size and high growth rate is further compounded by the age structure of the society. According to the 1971 census, 42% of the population was below the age of 15 years. This young age of the population has two major implications. Firstly, a high dependency ratio is a burden to the wage earner and, secondly, there is the imminent prospect of the youth of today entering the child bearing years. The result can be that even if the age - specific fertility may not increase, the birth rate would show a rising trend. Thus the age structure of India's population has immense potentiality for higher population growth and unless a determined effort is made to promote family planning over the next two decades, the Indian population could cross the one billion mark by the end of the century.

Rapid population growth has economic, social and political implications. It affects education, health, transport, communication, housing, environment, etc. In India it has tended to widen the gap between resources and numbers and aggravated the problems of malnutrition, poverty, under-employment and unemployment. It was recently estimated that nearly 48% of the rural population and 41% of the urban population in India was below the poverty line in 1977-1978.

What then is the solution to the population problem in India? There is a viewpoint that as socio-economic modernisation takes place, it is followed by a deliberate limitation of fertility on the part of individual couples. It has also been mentioned in international forums that 'development is the best contraceptive'. While these theories may not be disputable, the critical element in the Indian context is time. A reduction in human fertility is, therefore, absolutely essential.

Evolution Of The Family Planning Programme

The Indian family planning programme was officially launched in 1951-1952 soon after the country became free. The first fifteen years constituted a period of trial and error and of slow progress and the programme made very little impact on the birth rate. In this phase, the programme was more or less clinic-based and did not have a vigorous backing of media, extension education and action research. Towards 1966, the clinic based approach of the previous fifteen years was replaced by an extension approach to carry the message and services to the

people in the far corners of the country, involving voluntary organisations and local leaders. Simultaneously, in respect of the different methods of family planning, a 'cafeteria approach' was adopted, leaving the choice to the acceptor. The extension or the community approach introduced after 1966 carried the programme well into the rural areas and the birth rate, which was estimated at 41.2 in the period of 1961-71, dropped to 33 per thousand in 1977. The programme became goal-oriented in 1966-67 and sought to reduce the birth rate to 30 per thousand by 1978-79. This objective could not be achieved; the 30 per thousand goal had recently to be postponed to 1982-83.

The socio-economic level of a community is an important determinant of the intensity of demand and utilisation of family welfare services. In this context, it is recognised that greater attention has to be paid to the welfare of women belonging to lower socio-economic groups. The nation is committed to a steady improvement in the status of women in the fields of education and employment.

Once fertility reaches moderate levels (i.e. a birth rate between 30 and 35), a further reduction in it cannot be ensured automatically through a family planning programme only. It has been recognised during the last few years that in order to raise the programme effectiveness in India, it would be necessary to adopt an integrated approach. This aims at both an 'inward integration' in which the programme inputs of the Ministry of Health and Family Welfare and their counterparts in States are integrated and also an 'outward integration' involving many other departments of the Government, particularly those concerned with socio-economic development.

Services And Supplies

India is a Union of States. The provision of health services lies within the jurisdiction of the State Government. The family welfare programme is, however, a centrally sponsored scheme. The Union Ministry of Health and Family Welfare provides all the funds for it but the actual implementation of the programme in the field rests with the State Government. The structure of the health service in India is described in detail in the paper by Professor K.P. Shah (page 143). This consists of sub-centres, primary health centres, district hospitals and referral hospitals related to the Medical Colleges. Contraceptive facilities are available at each of these centres

and sterilisation and abortion services are available at some of the primary health centres.

Many of the Medical Colleges are imparting training to doctors in advanced techniques of sterilisation, medical termination of pregnancy and recanalisation. They are also conducting research in reproductive biology and newer methods of contraception.

A recent addition to the health and family welfare infra-structure in the rural areas is the community health volunteer (CHV). He is not a Government official. He is a local person who commands respect in his village, is given training in preventive and promotive aspects of health and in family welfare in the nearby Primary Health Centre (PHC) and thereafter devotes a part of his time looking after the people's health and family welfare needs. The intention is to have one CHV in every village for the population of one thousand.

To cater to the needs of the family welfare programme, there is a continuous, on-going training programme for medical, para-medical and non-medical personnel in various fields. In every village there are one or more traditional birth attendants (TBAs) who have acquired skills in the delivery of babies from traditional sources. The training programme, which would update the knowledge and skills of at least one TBA in every village to enable her to provide the same services she is giving at present in a more hygienic way and to enable her to recognise the high risk cases in which she should seek outside help, is under way.

Contraceptive Services

A 'cafeteria approach' to the provision of contraceptive services to acceptors is the basic policy of the Government. All such services are provided free of cost.

Nearly 29.6 million persons have accepted sterilisation as the permanent method of contraception since the beginning of the family planning programme in India. One significant feature of the situation today is that acceptors of terminal methods are younger in age and have fewer living children than was the case eight years ago. The Lippes loop was introduced in the family welfare programme around 1965. It has yet to acquire a reasonably sustained degree of popularity, though the acceptance

of intrauterine devices has, however, increased recently due to the introduction of the Copper 'T'. Trained auxiliary nurse midwives and public health nurses are permitted to insert the Lippes loop at the sub-centre or PHC when lady doctors may not be readily available.

Compared to most of the developing countries, the use of oral contraceptives in India has been slow. Most of our studies under field conditions indicate a low continuation rate of acceptors. As part of the 'cafeteria approach', a variety of conventional contraceptives such as condoms, jelly, diaphragm and foam tablets are made available free of cost.

The conditions under which legal abortion could be obtained were liberalised with the enactment of the 'Medical Termination of Pregnancy Act' in 1971. This Act very closely resembles the U.K. abortion law of 1967. Under it, legal abortion is permissable if contraception results from the failure of a contraceptive device or method which might have been used by one of the two partners. It needs, however, to be emphasised that legal abortion in India is basically a health measure and the law has not been passed as a means of birth control. The figures for legal abortion in the country until today are not impressive, but these do not take into account a large number of unreported legal abortions. There is also a dearth of facilities for abortion in rural areas. Efforts are being made to provide training for at least one of the two PHC doctors in the techniques of first trimester abortion. The inadequacy of lady doctors in the PHCs is a big constraint in the extension of the programme.

The Postpartum Programme is hospital based and maternity oriented and constitutes one of the most effective components of the National Family Welfare Programme. Covering 524 institutions in the country, including all Medical Colleges and district hospitals, it provides antenatal and post-natal services to women and newborn babies. At the time of delivery women are normally more motivated than otherwise to accept family planning and the programme takes advantage of this fact.

Motivation

The family planning programme in India is voluntary. To disseminate information about it and to motivate people to accept it, all media of publicity, including inter-personnel communication, at the disposal of the central and state governments, are being

utilised. The effort through the mass media is to create, enlarge and strengthen a climate in support of the programme. Through extensive education, which has been strengthened greatly in the recent past, the effort is to narrow the gap between awareness and acceptance. As an essential part of this effort, education camps of influential leaders in villages are being organised on a large scale in the countryside. On an average every camp is attended by 40 prominent persons from nearby villages. Doctors, para medical staff and media and extension personnel are present at the camps to give assistance and guidance to village leaders. Village leaders have a free exchange of views on various aspects of the programme. They are given print media material describing these aspects, which they carry back home.

In all schools under the central government, population education is now being imparted to students. The process has also started in many of the States. At the University level, plans are afoot to introduce a series of lectures on population education for graduate students. Population education is now included in the training and activities of all agricultural extension personnel and also industrial workers and their leaders.

Incentives

A variety of incentive schemes to promote acceptance of family planning are being tried. Studies have shown that among the lower socio-economic groups there is an awareness about family planning methods but ready acceptance is not forthcoming. This gap is sought to be bridged through motivation, backed by monetary incentives. Eligible persons who accept sterilisation or an intra-uterine device are given incentive money to compensate them for loss of wages arising from a brief stay in hospital. The State Governments have been given discretionary funds to implement incentive schemes that may be appropriate to different situations.

Target, Achievements And Monitoring - (Appendix A & B)

An operational programme (or target) is prepared at national level in terms of various methods of family planning and MCH services and distributed to the States. As the performance under the family planning programme has not been uniform throughout the country, we seek to correct the imbalance by distributing the national targets to States on the basis of population size, extent of urbanisation, the gap between the

attained and the desired levels of couple protection, the levels of female literacy and the magnitude of state income and expenditure on family welfare activities. Keeping these targets in view the performance level is assessed every month.

For achievement of the goal of reduction of birth rate of 30 by 1982-83, we have worked out an operational programme involving 25 million sterilisations, 5 million IUD insertions and an annual average of about 5 million conventional contraceptive users and oral pill users. Though we have adopted the 'cafeteria approach', it has been observed that sterilisation acceptance is definitely higher and accordingly our operational programme gives due importance to this method. The reliance on sterilisation is in fact based on the experience of a quarter of a century. To the acceptors, it constitutes a safe and one time operation and is preferred by couples with three or more children. It is well known that temporary methods have high drop-out rates. We believe that by directing the sterilisation programme to the appropriate target group, i.e. those who have had two or three children, this method would produce a significant demographic impact. Out of the 24.9 million couples currently protected under various methods, sterilisation accounts for the bulk of 22.2 million.

Long-Term Objectives

A Working Group on Population Policy has recommended a long-term demographic goal as the achievement of a net reproduction rate of one by the year 2001, which implies a birth rate of 21 and a death rate of 9 per thousand population. Thus we have now the objective of reducing fertility and mortality simultaneously. This calls for the provision of health and family planning services on a much larger scale. We are a signatory to the Alma Ata Declaration which calls for the provision of primary health for all by the turn of the century.

Family Planning Research

Experience with contraceptive methods the world over has demonstrated that there is need for a variety of contraceptives to meet the wide range of conditions relating to health, community attitudes, family relationships, the economic status and other factors which influence the adoption of methods for fertility control. In the past decade, intensive research efforts throughout the world in the field of reproductive biology, have led to the

development of many new methods for fertility control. In a country like India, where social customs are variable and differences exist in the socio-economic, ethnic, nutritional and educational backgrounds, certain special requirements need to be satisfied for the diverse groups of consumers within the country. For this purpose, the government is supporting a substantial programme of biomedical research in this field. Research areas include basic research for contraceptive development, contraceptive evaluation, behavioural sciences etc.

Appendix A

COUPLES EFFECTIVELY PROTECTED BY CONTRACEPTION IN VARIOUS STATES OF INDIA (UP TO SEPTEMBER 1979)

State	Estimated No. of couples in the reproductive Age	Sterilisations		IUD Insertions		Percentage
		No. of couples currently & effectively Protected	Percentage	Couples currently Protected	Couples effectively Protected	
Andhra Pradesh	9,043	2,346,876	26.0	32,803	31,163	0.3
Assam	2,806	522,748	18.6	16,385	15,566	0.5
Bihar	12,430	1,445,628	11.6	37,945	36,048	0.3
Gujarat	5,263	1,473,674	28.0	65,479	62,205	1.2
Haryana	1,947	462,445	23.8	78,476	74,552	3.8
Himachal Pradesh	712	150,664	21.2	10,215	9,704	1.4
Jammu & Kashmir	975	84,670	8.7	8,872	8,428	0.9
Karnatake	5,684	1,164,374	20.5	67,471	64,097	1.1
Kerala	3,545	980,477	27.7	33,492	31,817	0.9
Madhya Pradesh	9,158	1,842,463	20.1	49,236	46,774	0.5
Maharashtra	10,146	3,409,592	33.6	41,323	39,257	0.4
Manipur	181	12,572	6.9	2,773	2,634	1.5
Meghalaya	187	10,942	5.8	980	931	0.5
Nagaland	85	719	0.8	50	48	0.1
Orissa	4,604	1,066,643	23.2	37,137	35,280	0.8

Punjab	2,240	438,283	19.6	73,577	69,898	3.1
Rajasthan	5,777	658,401	11.4	37,995	36,095	0.6
Sikkim	32	842	2.6	1,124	1,068	3.3
Tamil Nadu	7,850	2,127,375	27.1	67,400	64,030	0.8
Tripura	315	28,713	9.1	586	557	0.2
Uttar Pradesh	18,241	1,631,634	8.9	336,201	319,491	1.8
West Bengal	8,248	1,676,180	20.3	29,203	27,743	0.3
A & N Islands	26	3,112	12.0	529	503	1.9
Arunachal Pradesh	98	608	0.6	449	427	0.4
Chandrigarh	78	9,849	12.6	6,507	6,182	7.9
D & N Haveli	15	1,973	13.2	16	15	0.1
Delhi	915	219,013	23.9	41,958	39,860	4.4
Goa Daman & Diu	156	23,635	15.2	1,197	1,137	0.7
Lakshadweep	7	395	5.6	13	12	0.2
Mizoram	64	4,841	7.6	737	700	1.1
Pendicherry	95	31,246	32.9	2,435	2,313	2.4
M/O Defence	-	125,538	-	9,884	9,390	-
M/O Railways	-	214,762	-	6,088	5,784	-
Commercial Distribution	-	-	-	-	-	-
All India	111,115	22,170,887	20.0	1,098,536	1,043,609	0.9

Appendix B

State	Couples currently Protected	Other Methods		All Methods		Percentage effectively Protected
		Couples effectively Protected	Percent effectively Protected	Couples currently Protected	Couples effectively Protected	
Andhra Pradesh	32,447	17,512	0.2	2,412,126	2,395,551	26.5
Assam	18,739	9,713	0.3	557,872	548,027	19.5*
Bihar	53,108	27,282	0.2	1,536,681	1,508,958	12.2*
Gujarat	174,272	95,079	1.8	1,713,425	1,630,958	31.0
Himachal Pradesh	6,869	3,528	0.5	167,748	163,896	23.0
Jammu & Kashmir	5,272	2,941	0.3	98,814	96,039	9.9*
Karnataka	80,249	44,473	0.8	1,312,094	1,272,944	22.4
Kerala	17,218	8,675	0.2	1,031,187	1,020,969	28.8
Madhya Pradesh	61,545	31,124	0.3	1,953,244	1,920,361	20.9*
Maharashtra	133,318	70,100	0.7	3,584,233	3,518,949	34.7
Manipur	1,872	1,008	0.6	17,217	16,214	9.0*
Meghalaya	596	369	0.2	12,518	12,242	6.5*
Nagaland	6	6	0.0	775	773	0.9*
Orissa	38,879	19,939	0.4	1,142,659	1,121,862	24.4
Punjab	102,012	51,233	2.3	613,872	559,414	25.0

Sikkim	1,078	1,076	3.4	3,044	2,986	9.3*
Tamil Nadu	73,957	38,480	0.5	2,268,732	2,229,884	28.4
Tripura	1,626	951	0.3	30,925	30,221	9.6*
Uttar Pradesh	299,463	155,202	0.9	2,267,298	2,106,226	11.5*
West Bengal	80,192	42,674	0.5	1,785,575	1,746,597	21.2*
A & N Islands	194	101	0.4	3,835	3,716	14.3*
Arunachal Pradesh	584	447	0.5	1,641	1,482	1.5*
Chandrigarh	7,084	3,572	4.6	23,440	19,603	25.1
D & N Haveli	385	197	1.3	2,374	2,185	14.6*
Delhi	137,542	69,120	7.6	398,513	327,993	35.8
Goa Daman & Diu	1,233	630	0.4	26,065	25,402	16.3*
Lakshadweep	185	121	1.7	593	528	7.5*
Mizoram	798	438	0.7	6,376	5,979	9.3*
Pendicherry	1,222	634	0.7	34,903	34,193	36.0
M/O Defence	54,404	27,520	-	189,826	162,457	-
M/O Railways	170,342	85,804	-	391,192	306,352	-
Commercial Distribution	861	430,555	0.4	261,111	430,555	0.4*
All India	2,637,086++	1,358,610++	1.2	25,906,569++	24,573,106++	22.1

++ - Includes 13,619 Eq. Oral Pill users of F.W. Association of India and CMAI Project.

* - Below all India average.

1. The estimates of couples protected given in the above table are based on revised methodology taking into account (a) latest distribution of acceptors (b) latest estimates of joint survivance ratios of husbands and wives in different age groups (c) annual 'attrition' rates for IUD acceptors is 37.6% and average annual 'attrition' rates for vasectomy acceptors and tubectomy acceptors are as follows:-

Periods	1st 5yrs	2nd 5yrs	3rd 5yrs	4th 5yrs	5th 5yrs
Vasectomy	4.11%	7.14%	13.93%	18.74%	33.20%
Tubectomy	2.72%	6.20%	13.52%	28.65%	53.89%

2. Couples effectively protected: Number of couples effectively protected is arrived at by multiplying the couples currently protected by the factor use-effectiveness of the method. The use-effectiveness for sterilisations, IUD, Eq. C.C. Users and Eq. Oral Pill users is taken as 100%, 95%, 50% and 100% respectively.

3. State-wise totals may not add up to All India figures due to rounding of States wise figures.

PROVISION OF FAMILY PLANNING SERVICES - THE MALAYSIAN EXPERIENCE

Dr. N. Aziz

Background

Family planning activities were first started by the Family Planning Association (FPA) in the State of Selangor Malaysia as early as 1953. By 1962, all states in Peninsular Malaysia had established their own Family Planning Associations. During that period, besides the FPAs, family planning services were also provided by private practitioners. However, such services only reached a small proportion of the population especially those in urban areas who were aware and could afford to pay for such services. The other constraints were limited personnel and funds, widespread ignorance, misconception and general resistance to new concepts.

Family planning was made a National Programme in 1966 when the National Family Planning Act was passed by Parliament. Thus the National Family Planning Board (NFPB), a statutory body, with a certain degree of autonomy was established under the Prime Minister's Department.

The Functions of the National Family Planning Board as Stipulated in the Family Planning Act of 1966

(i) Formulation of policies and methods for the promotion and spread of family planning knowledge and practice on the grounds of health of mothers and children and welfare of the family;
(ii) Programming, directing, administrating and coordinating of family planning activities in the country;
(iii) Training of all persons involved in the family planning extension works;
(iv) Conducting research on medical and biological methods relating to family planning;
(v) Promoting studies and research of inter-relationship between social, cultural, economic and population changes and also promoting research concerning fertility and maternity patterns in the country;
(vi) Setting up a system of evaluation.

Organisational Structure of the Traditional Family Planning Board

The organisational structure of the Board is depicted in Figure 1.

Objective

The long term objective is to reduce the population growth in Peninsular Malaysia from about 3% in 1966 to 2% by 1985, in order to complement and supplement the total government's efforts to improve the quality of life of the people.

Implementation of the National Family Planning Programme

The implementation schedule is depicted in Table 1.

Approaches in the Implementation

The Post-Partum Approach - Phase 1 of the service delivery programme was concentrated in the large metropolitan centres. Static clinics of the Board were established in General and Maternity Hospitals in Peninsular Malaysia. The Basic approach used was the post-partum and clinic approach. The rationale for this strategy is obvious. People in urban areas are more easily motivated, and there were facilities already available; also it was not too difficult to recruit or train personnel, as well as use the existing medical and para-medical personnel in the hospitals. Furthermore, women are most receptive during the post-partum period.

Beyond the Post-Partum Approach - Phase II (1969), was implemented for smaller towns and the adjoining rural health centres. The provision of family planning services at this stage went beyond post-partum mothers and started reaching others, through home visiting and child health clinics.

The Integrated Approach

Integration of Family Planning with the Rural Health Services - About 70% of the population of Malaysia are located in the rural areas. Integration of family planning with the Maternal and Child Health Services of the Ministry of Health, enabled the family planning services to be provided as part of a total family health package to the rural population.

FIGURE 1

ORGANISATIONAL STRUCTURE OF THE NATIONAL FAMILY PLANNING BOARD

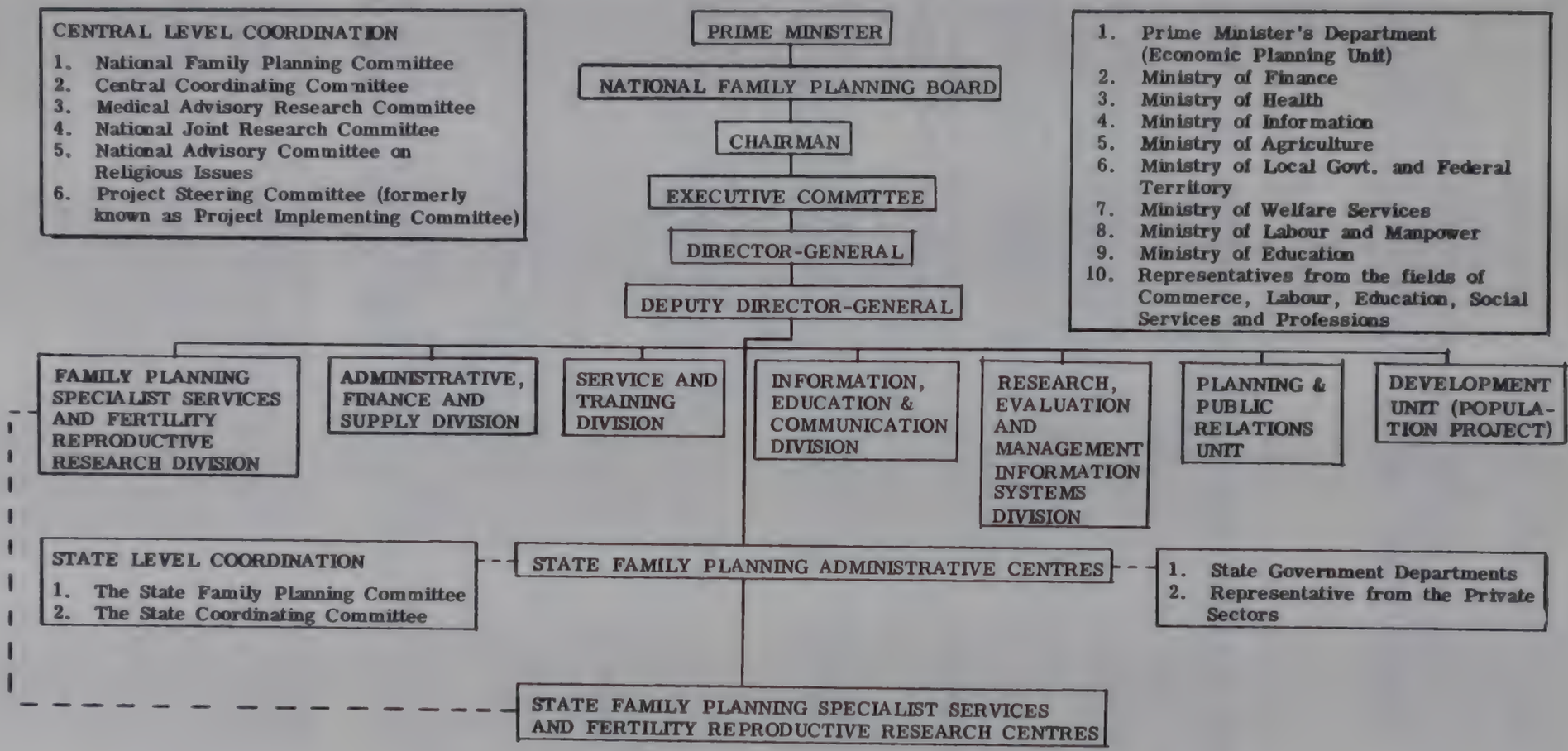

CENTRAL LEVEL COORDINATION
1. National Family Planning Committee
2. Central Coordinating Committee
3. Medical Advisory Research Committee
4. National Joint Research Committee
5. National Advisory Committee on Religious Issues
6. Project Steering Committee (formerly known as Project Implementing Committee)
PRIME MINISTER
NATIONAL FAMILY PLANNING BOARD
CHAIRMAN
EXECUTIVE COMMITTEE
DIRECTOR-GENERAL
DEPUTY DIRECTOR-GENERAL
1. Prime Minister's Department (Economic Planning Unit)
2. Ministry of Finance
3. Ministry of Health
4. Ministry of Information
5. Ministry of Agriculture
6. Ministry of Local Govt. and Federal Territory
7. Ministry of Welfare Services
8. Ministry of Labour and Manpower
9. Ministry of Education
10. Representatives from the fields of Commerce, Labour, Education, Social Services and Professions
FAMILY PLANNING SPECIALIST SERVICES AND FERTILITY REPRODUCTIVE RESEARCH DIVISION
ADMINISTRATIVE, FINANCE AND SUPPLY DIVISION
SERVICE AND TRAINING DIVISION
INFORMATION, EDUCATION & COMMUNICATION DIVISION
RESEARCH, EVALUATION AND MANAGEMENT INFORMATION SYSTEMS DIVISION
PLANNING & PUBLIC RELATIONS UNIT
DEVELOPMENT UNIT (POPULATION PROJECT)
STATE LEVEL COORDINATION
1. The State Family Planning Committee
2. The State Coordinating Committee
STATE FAMILY PLANNING ADMINISTRATIVE CENTRES
1. State Government Departments
2. Representative from the Private Sectors
STATE FAMILY PLANNING SPECIALIST SERVICES AND FERTILITY REPRODUCTIVE RESEARCH CENTRES

TABLE 1

THE NATIONAL FAMILY PLANNING PROGRAMME IMPLEMENTATION SCHEDULES

Year 1966 - 1976:-	(A) CONTRACEPTIVE SERVICE DELIVERY APPROACH	
Phase I	-	Covering large municipalities with maternity hospitals and certain rural health centres as pilot study areas (year initiated 1967/1968).
Phase II	-	Covering smaller towns and adjoining rural health centres (year initiated 1968).
Phase III	-	Covering the remaining rural health centres via the integration of family planning service delivery into the delivery system of the Ministry of Health's Maternity and Child Health Services (year initiated 1970/1972).
Phase IV	-	Aimed at covering the rural areas, whereby the services are provided by a combination of mobile units and traditional midwives (year initiated 1973).
Year 1976 - 1986:-	(B) CONTRACEPTIVE SERVICE DELIVERY/POPULATION APPROACH	
Phase V	-	Consolidation and strengthening of Urban Family Planning coverage and expansion into other rural areas. Utilising multi-disciplinary informal approaches, and implementing "Beyond Family Planning Policies".

Family Planning in Land Development Schemes (FELDA) - Land development and resettlement of people cannot be looked on solely as an economic programme but rather as a total social development programme. Planning of family size forms an integral part of an overall programme to improve the quality of life in such resettlement schemes.

The Utilisation of Special Groups

Traditional Birth Attendants (TBA) - Recognising the importance and influential nature of the traditional birth attendants the NFPB began to develop an action oriented programme aimed at utilising the trained TBAs to provide services in those areas not accessible to either the NFPB or any other servicing agencies. There are about 3,000 TBAs in Peninsular Malaysia. These village midwives are the indigenous personnel who are very much respected and trusted by the rural community. According to a report by the Maternal and Child Health (MCH) Committee of the National Health Council, about 174,000 births or 57% of all deliveries in 1964, were delivered by TBAs. TBAs who have genuinely recruited clients to accept family planning are given compensatory payment so as not to jeopardise their sources of income.

Family Planning in Industrial Areas - Malaysia as a developing country is having an increasing number of industrial areas, located especially near urban areas. Most of these workers are either young parents-to-be who are mostly females. The nature of their work is such that they have irregular shifts and this will pose a problem if they have unplanned families. Family planning services are being provided through the industrial nurses by the NFPB and complemented by Family Planning Associations. A special project to provide community education has also been initiated by the Federation of Family Planning Associations in Bayan Lepas Industrial Estate, Penang.

Family Planning in Plantation Estates - Plantation estates are another sector of the rural population which have a sizeable group of people who are economically productive and in need of social development programmes. Birth rates in the estates are very high and similarly the infant mortality rate is also very high. Health facilities are usually lacking. Provision of family planning services in the estate sector is very important because a well planned family will influence the productivity of the workers in terms of reduced absenteeism or improvement in the general health status. Efforts are now being made to further improve

this programme by developing innovational projects which will emphasise family health and community involvement.

Provision of Family Planning Services by General Practitioners - During the Second Malaysian Plan period (1971-1975) it was estimated that about 133,900 acceptors, or, 25% of total acceptors, were contributed by the 'non-programme sources' (i.e. acceptors obtaining services or supplies from private practitioners, pharmacies etc., that did not send statistical returns to the NFPB). It is strongly felt that the trend of this 'non-programme' contribution will be increasing in the coming years. Private practitioners are encouraged to participate officially in the programme, either in their own private clinics or join the part-time service programme in NFPB clinics. This will enhance the quality of service and also ensure a more accurate reporting system to the Board. Currently, about 93 private practitioners are in the programme and about 13 in the part-time service programme.

Innovative Approaches

Integration of Family Planning with Parasite Control - The most recent attempt to further stimulate the people's interest in the family planning programme is through the 'humane approach', that is by integrating family planning with parasite control and nutrition. While searching for alternative approaches to promote family planning it has been realised that a family planning programme cannot be pursued in isolation but should be combined with other measures designed to improve the health and well-being of the family.

There exist close inter-relationships between fertility, nutrition and parasitic diseases. Malnutrition has been shown to be more common in large families. Many studies have indicated increasing incidence of helminthiasis with large family size. Helminthiasis aggravates protein-calories malnutrition and iron-deficiency anaemia. Conversely, pre-existing malnutrition aggravates pathological involvement of helminthiasis. Protein-calorie malnutrition and iron deficiency anaemia are widespread in areas where high birth rate and high parasitic infection rate prevail.

Beyond the Contraceptive Approach

Development of Special Services and Research - The establishment of Family Planning Specialist Centres, marks another milestone in the development of family planning services. The objective

of this set-up is to broaden the scope of services, as well as to enhance the quality by providing special services which include infertility, sex, marriage and genetic counselling. The Family Planning Specialist Centres would also serve as a referral and consultation centre for problems related to contraception.

The Centre would conduct and coordinate research in the field of fertility and human reproduction relevant to the Malaysian population. Initially research would mainly be epidemiological, programme and problem oriented in nature. Later on it would embark on more basic biomedical research. The Specialist Centre would also conduct and coordinate specialised training programmes in laparoscopy, reproductive endocrinology and infertility.

Involvement of Women in Development - Women, as a social group, have experienced a high degree of emancipation in Malaysia in the last few decades and this is clearly indicated by increasing participation of women in the economy.

Experience has shown that female employment has led to a small but increasing number of women who marry later. Participation of women in the economy and its effect on fertility is therefore one of the most important measures to be considered in the developmental approach to family planning. Therefore another innovative approach considered by the NFPB is to upgrade the status of women. The main emphasis of this project is through family development.

Population Education in Schools - The provision for Population Education is in response to the need to prepare the younger generation on population issues, so that children can make responsible decisions when they are adults with respect to population issues and fertility behaviour.

Supportive Activities of Family Planning Service Delivery

Training - It has been recognised that training of family planning personnel is an essential component in the effective implementation of the family planning programme.

Various types of training courses have been conducted not only for the NFPB staff but also for personnel from the Ministry of Health, FFPA, State FPAs, other governmental and non-governmental agencies. Training sessions include orientation, initial and periodic refresher and in-service courses. The curriculum

for all family planning training courses conducted in the country are standardised by the NFPB and all matters pertaining to family planning/population training are referred to the NFPB for advice and approval before being planned and implemented by the various ministries or agencies. Efforts have also been made to equip the trainers of the National Family Planning Board and other organisations with modern teaching techniques pertaining to family planning/population matters by sending them for tutorial courses in appropriate institutions abroad and locally.

(i) Population Studies and Research Institutions of Higher Learning

The institutions of higher learning could play an important role in the preparation of graduates and under-graduates on the understanding of population issues in development and in planning, as well as to serve as centres for population research. Thus, the first step was taken to involve the University of Malaya in this project with the ultimate objective of developing a Population Study Centre in that University.

(ii) University of Agriculture, Malaysia - Asian Modular Training Project

Malaysia is currently taking the lead in an inter-country Modular Training Project to provide the training of Family Planning workers in motivation techniques and later to integrate population and development activities through extension methods and techniques.

This project has been developed in response to the shortage of trained and highly skilled development/population agency personnel and the resulting pressing need for strengthening the training programmes of such agencies. The long range objective is to improve the quality of life of the people in the Asian countries by enhancing the effectiveness of their development efforts through improved and integrated extension methods and techniques. This will be accomplished by institutionalising the integration of current national population and development activities. In addition Malaysia is also participating in the implementation of four other Lead Projects by the Asian countries including migration, population and development, multi-media projects and utilisation of research data in planning.

(iii) Information-Education-Communication (IEC)

The IEC activities on Family Planning/Population are coordinated by the NFPB at the central level where policies, strategies, guidelines and relevant materials are developed.

Dialogue sessions, group meetings, seminars and exhibitions have been organised with the aim of disseminating family planning/ population knowledge to all categories of audiences. The message/ content for these sessions emphasise the 'quality of life' of the family rather than the 'limitation of the number of children' in the family. This approach is successful in attracting bigger crowds in attendances and the people's reaction towards information as seen by their increased requests for dialogue sessions especially from the influential sectors of the community such as political parties, youth organisations and village development committees.

Evaluation/Socio-Economic/Demographic Research

Since the inception of the National Programme, the NFPB has incorporated an effective built-in evaluation/research system to evaluate and monitor the progress and direction of the contraceptive service delivery system and also to perform socio-economic/ demographic researches. Under this system, all service statistics are reported uniformly by all implementing agencies and the electronic data processing of this information is performed centrally by the Board.

Socio-economic, health and cultural surveys and other analytical studies have also been undertaken by the Board. Some of these studies have been carried out with the cooperation of the University of Malaya, Department of Statistics and the Economic and Social Commission for Asia and Pacific.

A series of surveys, studies and researches have been ear-marked under the Population and Family Health Project period (1978-1982). The NFPB has farmed out some of the major researches to be undertaken by some of the researchers from local higher institutions that possess the capacity, capability and technical know-how but at all times the NFPB will be coordinating such activities by providing basic information, the necessary guidelines, advice and support.

In early 1978 the NFPB has converted the evaluation system into an electronic data processing system by the installation of a mini-computer at the central level. With the installation of the mini-computer, the analysis of the massive survey data collected from the various surveys and ad hoc studies have been speeded up and also the scope of service statistics analysis.

Under the Third Malaysia Plan Period (1976-1980) there are further plans to expand the capacity of the mini-computer by adding on additional peripherals and also direct linkage with the computer facilities at the Economic Planning Unit of the Prime Minister's Department and other government agencies so that the capacity and scope for analysing massive data will be made possible by the Board in the field of Population and Family Planning research.

Library Facilities

The NFPB has established a library centrally as well as branch libraries at the NFPB's State Offices to cater for the referral and research needs of the Board's staff and other local or overseas general users who are interested or involved in the field of population and family planning.

Performance and Achievement of the Programme

1. The Contraceptive Service Coverage - Acceptors throughout the country are being served by the NFPB's clinics, FPA's clinics, Integrations clinics, FELDA clinics, traditional midwives, estate clinics and private practitioners' clinics (Figure 2). To date there are 164 private practitioners in the urban areas serving through their own clinics with supplies obtained directly from NFPB. The NFPB has established 76 static clinics, 383 satellite clinics and 42 estate clinics to serve the urban areas mainly through General and District Hospitals, new villages, industrial sectors and the rural areas through rural health centres and estates.

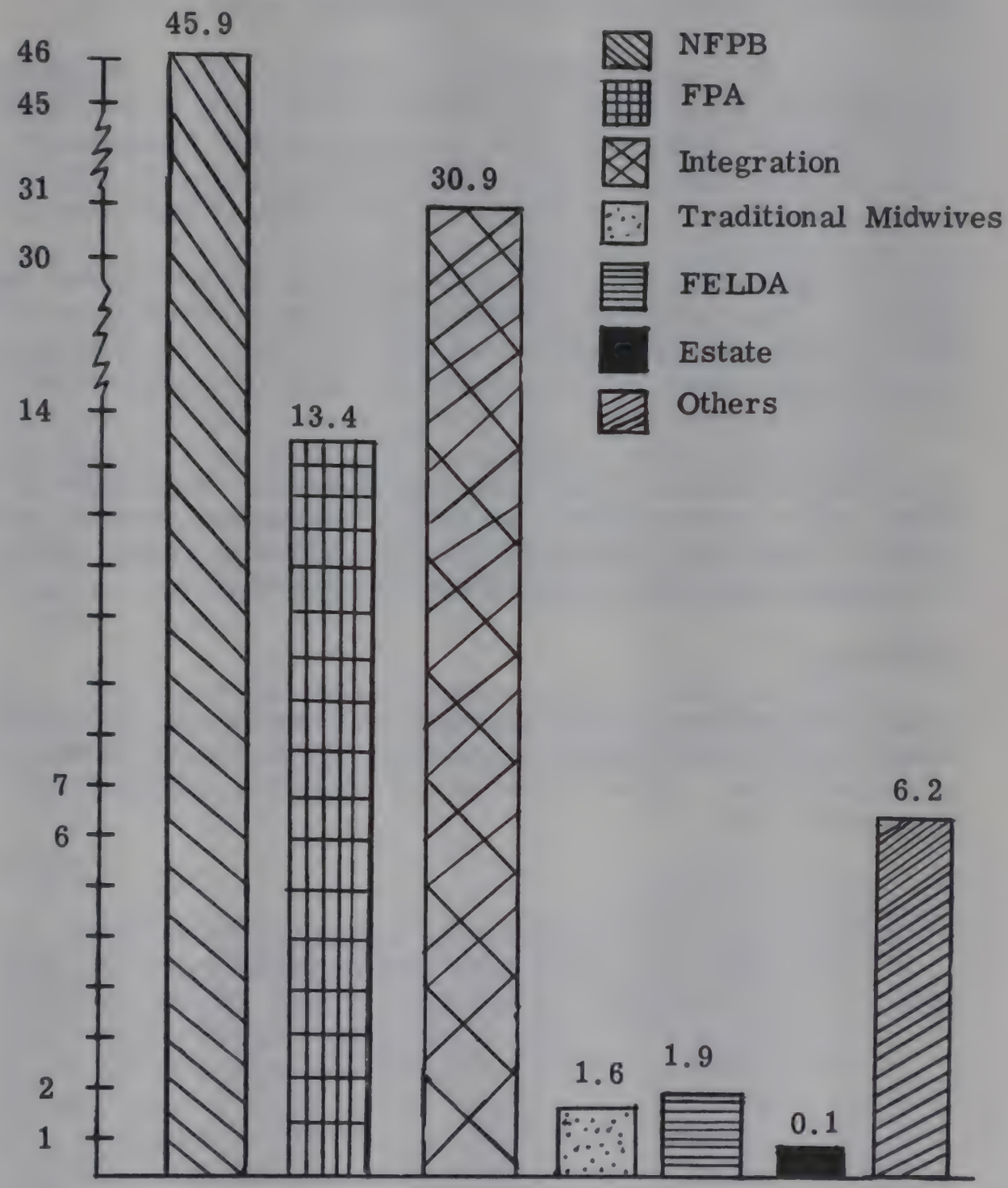
The Ministry of Health, on the other hand, have integrated family planning services in 206 Health Centres, 5 community hospitals and 984 midwifery clinics.

There are also 79 FELDA clinics, 257 estates and 173 traditional midwives which serve through special programmes arranged with the NFPB covering part of the rural areas.

2. Acceptance by Methods - Although the provision of contraceptive services then was based on the cafeteria system depending on voluntary acceptance, a lot of emphasis was placed on the oral pill and the delivery of contraceptive services was then very much pill orientated. This was mainly due to earlier experiences with the pills through the Family Planning Associations and

FIGURE 2

ACCEPTORS RECRUITED BY TYPES OF AGENCIES (%) 1978



the fact that it was acceptable for para-medicals to dispense contraceptive pills but not to insert intrauterine contraceptive devices (IUCD) or carry out operative procedures. In 1978 82.3% of the women were on the pills, 1.9% on IUCDs, 6% sterilisation and the rest other methods.

3. Impact of Family Planning on Fertility - Since its inception The National Programme has reached about 80% of its target of acceptors. There has been a decline in the crude birth rate from 40.3 in 1962 to 30.6 in 1976, and a decline in population growth rate from 3.1 in 1966 to 2.3 in 1976 (Figure 2).

Both the maternal and infant mortalities in Malaysia have declined steadily. The maternal mortality rate has declined from 1.79 per 1,000 in 1966 to 0.78 per 1,000 in 1978. The infant mortality rate was 30.7 per 1,000 in 1976 as compared to 79.6 per 1,000 in 1958.

Even though many factors have contributed to the decline of the above rates, on statistical analysis utilising age specific fertility rates, it has been shown that the The National Family Planning Programme has made a significant contribution.

Problems

Like other national family planning programmes in developing countries, Malaysia faces a number of problems in service and implementation. Some of the major problems affecting the programme are:

1. Service Delivery

   (i) Pill: The provision of services in both rural and urban areas has been pill-oriented which requires prescription and handling of side effects by medical officers and para-medical personnel. Such trained and experienced personnel are still in short supply. However, in order to ensure effective and consistent delivery of services, standardised guidelines have been drawn up in the form of a medical check list for para-medical staff prescribing oral contraceptives and also for referral.

   (ii) IUCD: This device is acceptable to the people but insertion of the device by para-medical staff is still

not yet accepted. The reliance on the few medical officers who are serving in the programme is further aggravated by the time taken in management of complications which may arise without a supportive service being available.

2. Training

When the National Programme was first initiated in 1966, the problem in service delivery was the lack of trained personnel. To overcome this problem, the NFPB has reviewed and stepped up its training activities to provide population and family planning training to all Family Planning personnel and other individuals from the organised sectors who are involved in the total national expansion programmes. The FFPA and the Ministry of Health also provide family planning training to their own staff and their training activities are coordinated by the NFPB to ensure the standardisation of the courses' curriculum. The achievement made in training so far is quite considerable considering the fact that only 199 staff were trained in 1975 and in 1978 a total of 1,164 staff had been trained. This means a cumulative total of 14,348 staff have been provided with family planning training since 1967.

However, despite those achievements made to overcome the workload in training, the main problem has been the high rate of turnover of para-medical and medical staff especially in the rural health service.

The Future

After 13 years of programme implementation, it is now estimated that about 45% of eligible couples are practising contraception. Our challenge for the future is to increase the level of acceptance and continuation of usage and this is getting more and more difficult as the target population will consist of more difficult groups. New innovations are needed in Family Planning service delivery and, coupled with the government's intensive effort to eradicate poverty through a comprehensive social and economic plan, this task may not be insurmountable.

CONCLUSION

It can be observed from this paper that the approach taken in the provision of family planning services in Malaysia, was initially a

contraceptive approach. Contraception includes all measures used by the couple to prevent conception. In the case of our experience, we have relied heavily on the pill. Past experience in Europe has indicated that motivation is very important even when using the least reliable method. Acceptance of family planning by any couple depends not only on the technology available but also other interacting factors such as education, social strategy, literacy, political and economic participation of the women.

Today, the world has had the experience of nearly two decades of family planning programmes. Whilst 30 years ago our knowledge on population and family planning was rather limited, now it can no longer be denied that population changes are closely inter-related to the economic and social conditions. Development efforts intended to improve the quality of life of the people must, therefore, seriously take into consideration the fact that population growth has implications on all aspects related to development planning, be it health improvement employment or income distribution. Thus, today the approach is to view family planning and population in the total development perspective both at the macro and micro levels of development approach. Indeed this option was not immediately imposed by most countries in the 1960s as major efforts were towards promoting the provision of contraceptive service delivery.

DISCUSSION

CHAIRMAN: Professor S.S. Ratnam

Professor E.T. Mokgokong (Discussion Opener) - The papers presented this morning have highlighted the importance of Government involvement in the planning and implementation of family planning programmes. The success of such Government participation depends mainly on the Government's implementation of other programmes aimed at improving the quality of life of the people and other health care measures at the same time. To be successful, family planning programmes must be planned as part of a package deal together with the increase in per-capita income of the people, better education, and should be encorporated in ante and postnatal care, immunisation and cancer detection schemes. Unless introduced this way the intended effect of family planning projects may be suspect, as was the case in South Africa where their enthusiastic introduction was initially regarded by many Africans as a sinister move to keep the under-privileged population down. The lesson was learnt and attempts were made to offer a package deal.

Most racial groups in developing countries have traditional child spacing practices. In South African tribes these practices were carried out as health promoting measures - protecting the male and not the female. These measures included abstaining from coitus during the period of lactation - the man was not allowed into the wife's hut until the child was about 2 years of age. The chances of success of abstinance was further aided by the practice of polygamy. It would thus appear that in such races family planning should be readily accepted.

Religious and cultural beliefs may be counter promotive to the acceptance of family planning. The religious belief that sex is for reproduction and not enjoyment is fortunately decreasing. Some African tribes still regard large families as giving status to the man. A large number of daughters may mean potential wealth where "lobola" is practised. These beliefs should be studied and known to planners of family planning schemes so that appropriate measures are taken to counter them.

Another important factor tending to cause rejection of family planning is the importance and status of the man in an African

family. The woman cannot consent to any health care measures without consulting the male. Therefore, in planning introduction of family spacing schemes the role of the male should be recognised and appropriately dealt with. Shortage of highly skilled man-power is rife in developing communities. The organisers of family planning should recognise that the schemes can be effective if workers of a lower level of education are used. In South Africa a decade ago it was totally rejected that a nurse could take and prepare a cervical smear for cytology or introduce an intrauterine contraceptive device safely. Today nurses fulfill this function adequately and run the primary health care clinics well. The doctor is thus freed to attend to other functions.

The high drop-out rate which did not come out clearly in this morning's paper is due mainly to failure to counter factors tending to cause rejection of family planning. Among these in South Africa is the male factor. This factor must always take prominence when a plan is initiated.

To counter the increasing pre-marital pregnancy rate sex education and contraception should be taught comprehensively at school. If left for later, invariably the damage will be done already.

CHAPTER 6

DISCUSSION GROUPS

INFLUENCE OF MATERNAL NUTRITION ON PREGNANCY OUTCOME

CHAIRMAN: Dr. G. Ebrahim

Fetal Growth

Hospital as well as field studies on perinatal mortality in several countries of South East Asia sponsored by the World Health Organization during the seventies revealed rates of between 80 and 100 per thousand births. Low birthweight was found to be the underlying cause in at least a third of the perinatal deaths. More recently hospital based data in Zaria, where 40% of all deliveries occur in hospital revealed an overall perinatal mortality rate of 86.4 per 1,000. In babies with low birthweight (<2.5kg) the rate was 251.8 per 1,000 compared with 59.3 per 1,000 in the case of babies who weighed 2,500gm or more at birth.

These and other similar studies have revealed that the intra-uterine growth of the fetus and the subsequent weight of the baby at birth are closely related to the outcome of pregnancy. A difference of as little as 3% in the number of live-born infants of low birthweight raises the perinatal and infant mortality rate by 5 per 1,000.

Of the estimated 22 million babies of low birthweight born each year only 5% are born in the developed countries and are mostly pre-term; of the remaining 21 million in developing countries 16 million are small-for-dates. Thus in many developing countries the incidence of low birthweight can be as high as 30%. This figure is important since low birthweight is responsible for up to 70% perinatal mortality and up to half the infant mortality in many countries.

Relationship of Fetal Growth to Maternal Nutrition

Nutrition of the mother is the single most important factor in ensuring adequate growth of the fetus and for the establishment of adequate lactation postnatally. Anthropometric studies of the newborn infant in Vellore, S. India have shown a significant correlation between maternal triceps skinfold thickness and the weight and length of the infant.

A survey of dietary intake of women in coastal Tanzania revealed that mean daily energy intake was 1,850 calories and that of protein was 51.5gm. Iron intake in the diet ranged from 10 - 16.2gm per day. A significant correlation was seen between the energy intake of the mother and the size of the baby. In order to have a baby weighing more than 3.1kg it was necessary that the mother should consume at least 50gm protein daily. 40% of the women were eating less protein than this amount. Energy deficiency was a much more serious problem. To have a baby weighing 3.1kg a mother had to consume 2,200 calories per day and only 20% of the women had as much.

A similar study in four Guatemalan villages showed that the mean food intake was 1,500 calories and 40gm protein during pregnancy. The average weight gain in pregnancy was 7kg which is about half of that in well-nourished women in affluent societies. The mean birthweight in the group under observation was 3kg. Of 39 infants born after a normal period of gestation, about a third weighed 2.5kg or less. Here too energy intake was more closely related to the birthweight. In 8 women with a daily calorie intake between 1,900 and 2,100 calories, the mean birthweight was 3kg, and in 9 women with a daily calorie intake of between 2,200 and 3,100 calories the mean birthweight was 3.2kg. Supplementation studies confirmed this observed importance of energy intake. The incidence of lightweight babies was greatest when the Guatemalan mother consumed less than 1,800 calories per day. It was significant that in the same mother there was an average difference of 2.29 between successive siblings per 1,000 calories change in the diet.

Supplementation studies in India have shown that with a daily addition of 50gm protein and 500 calories the mean birthweight in the babies was 3,000gm compared to 2,700gm in controls.

Birthweight and Body Composition of the Fetus

Fetal body composition is closely related to body weight. Studies in India and English fetuses have shown that up to the age of 26 - 28 weeks of gestation the total body weights were similar in the two groups but there was significant qualitative difference. There was a deficit of protein and iron content in the case of Indian babies. Also liver stores of vitamin A, B_2 and folate were low.

The effect of maternal food intake on the wellbeing and growth of the fetus was best demonstrated during the Second World War. Serious food shortages finally culminating in famine were experienced in Holland for a well-demarcated period. The famine reached its maximum severity after 6 weeks and lasted for 27 weeks altogether. Birthweights were lowest in mothers who had experienced 18 to 21 weeks of famine and began to rise immediately after the famine ended. The effect on fetal growth was maximum when the mother experienced food shortage in the second half of pregnancy, demonstrating the well-documented fact that the demands of the fetus are not so heavy in the first trimester.

In the developing world food shortage is chronic and often acute at times of poor harvest. In a dietary survey of 352 pregnant women in India the mean daily intakes were 1,500 calories and 38gm protein. On such a poor diet many women fail to gain adequate weight. The mean increase in body weight was 6.02kg and there were some women who did not gain weight at all.

Factors Contributing to Poor Nutrition of the Pregnant Woman

An important contributing factor which is rarely mentioned in textbooks of obstetrics or nutrition is the age of the mother. In most traditional societies marriages take place early so that the average woman commences reproductive activity even before she has completed her own growth (Tables 1 and 2). The low height of mothers reported from many developing countries is partly due to nutritional stunting in early childhood and lack of optimal growth at puberty.

TABLE 1

Age at Marriage, Hyderabad, India

Area	No	<7	7-10	10-12	12-14	14-16	>16 Yrs
Rural Area 1	100	-	12	18	32	30	8
Rural Area 2	300	9	69	141	67	12	2
Urban	100	-	4	2	16	46	18

TABLE 2

Age at First Delivery, Hyderabad, India

Area	No	<16	16-18	18-20	>20 Yrs
Rural	100	28	44	20	8
Urban	100	10	48	22	20

There are several customs and beliefs with regard to the diet of the pregnant woman. Several foods are not allowed to the pregnant woman because of their supposed effects on the fetus. Even the staple is allowed in less than usual amounts. The pregnant woman is always advised to eat less so that she will have a 'small' baby and less trouble at the time of the delivery.

After the birth of the baby, though prolonged lactation helps to delay the next pregnancy, there is rarely sufficient interval between pregnancies for the mother to recover from the nutritional point of view. Many mothers even lose weight ending up lighter than before the pregnancy. One nutrient most commonly affected is iron. It is felt that approximately two years on a nourishing diet are necessary for the mother to make good the loss of iron contributed to the fetus. Moreover many women commence child-bearing with iron deficiency, so that the mild iron deficiency anaemia of adolescence is carried forward as the anaemia of pregnancy. In one survey of nutritional anaemia in pregnancy conducted in seven Latin American countries 38.5% of the pregnant women studied were found to be anaemic.

Intervention Measures

Good antenatal care stands out as the single most important intervention measure to deal with the widespread nutritional deficiency in pregnancy. To be effective the antenatal care should be part of the overall mother and child health services. This recommendation is in keeping with the observation that true prevention begins even before pregnancy through promotion of good growth, nutrition and physical as well as mental health. Preventive measures during pregnancy, however essential, are the second line of defence.

The main objectives of antenatal care in developing countries are improvement of nutrition through education and supplementation, prevention and treatment of anaemia and eradication of the parasitic load.

In countries where the bulk of the health services and resources are concentrated in the urban area, the 80 percent or so of the population living in rural areas are not likely to have access to the formal health service in the foreseeable future. Here the training of the traditional birth attendant in providing practical dietary advice, supplying iron and folic acid tablets to the pregnant woman and in the screening of 'at risk' mothers has been extremely beneficial. In many respects the traditional birth attendant has been more effective in the promotion of new knowledge and in making perinatal care acceptable in the highly traditional peasant societies.

LOW BIRTHWEIGHT - INCIDENCE, AETIOLOGY AND PREVENTION

CHAIRMAN: Dr. P.M. Dunn

We were a small group of three obstetricians, Professor Pinkerton (UK), Professor Fairweather (UK), and Professor Caldeyro-Barcia (Uruguay) and four paediatricians, Professor Bwibo (Kenya), Dr. Chan (UK), Professor Hendrickse (UK), and myself.

INCIDENCE

The new World Health Organization definition of low birthweight (LBW) is a birthweight of less than 2.5kg. The incidence varies tremendously throughout the world. In developed countries it is variously reported as from 2% to 12% of all births. In developing countries the incidence varies at a higher level from 12% to as much as 45% in some countries.

Why is the subject important? We all appreciate that LBW is associated with a perinatal mortality of anything from 5 to 15 times greater than that of heavier babies, and likewise it is associated with a very much higher perinatal morbidity and incidence of long-term handicap.

LBW babies are made up of two main groups with a spectrum in-between: the pre-term baby born before 37 weeks and the small-for-dates baby born after 37 weeks. The incidence of these two sub-groups of LBW vary from country to country. By and large, in developed countries the small-for-dates babies are the minority sub-group, making up 30% to 40% of LBW infants. In developing countries, the incidence of small-for-dates LBWs tends to be much higher, often 60% to 80%. The reason for this higher incidence of small-for-dates LBW infants in developing countries is likely to be due to many factors including the common occurrence of anaemia, infection and malnutrition, and the effects of frequent pregnancies, of early marriage and child-bearing, of short intervals between births and of high parity. Before discussing some of these factors in more detail, we wish to mention two obstetric strategies widely practised in developed countries.

ELECTIVE DELIVERY. Elective delivery is often undertaken either by surgical amniotomy or Caesarean section of babies thought to be at risk, either because they are not growing, because they are showing signs of fetal distress or for less worthy reasons such as the convenience of the patient or the doctor. Whilst we would agree that elective delivery is justified when the baby is at risk, there have been worrying reports from a number of countries suggesting that as many as 10% to 20% of LBW infants have been due to unexpected prematurity following elective delivery at term. Often these iatrogenic LBW infants have suffered from the complications of prematurity such as respiratory distress syndrome.

TOCOLYTIC DRUGS. The second obstetric strategy that we wish to discuss is the current vogue for the inhibition of premature labour using tocolytic drugs. Our Group was unanimous that there was still no good evidence to support the present widespread use of this therapy. Furthermore, we considered that its ability to solve the problems of pre-term labour was very limited. Dr. Anne Anderson of Oxford demonstrated this in 1977 (1). She looked in detail at their 6% of pre-term deliveries. After removing the cases that had been suitable for elective delivery, the cases in which the baby was malformed, those where the membranes were already ruptured and labour well advanced, and those in which the pregnancy had already reached the relative safety of 35 to 36 weeks' gestation, she was left with only a fraction of 1%. In other words, while inhibition of labour may have a place, and probably does have a small place, it certainly will not solve the great majority of our prematurity problems.

We felt that perhaps more attention and effort should be directed to the study of the aetiological factors that are associated with LBW, in order to prevent the event or at least to enable early diagnosis to be made and the introduction of appropriate management. The following subjects particularly deserve attention.

IMPORTANT AETIOLOGICAL FACTORS

Nutrition

This is probably the single most important factor associated with LBW, whether severe maternal malnutrition during pregnancy, particularly the second half, or chronic malnutrition (often combined with heavy manual labour). There is good evidence from many studies

that maternal malnutrition will reduce birthweight. The Dutch famine at the end of the War was associated with a mean drop in term birthweight of 300gms. Some may dismiss this 300gms as being simply a luxury in fat depots but there are many who would disagree. Weight gain probably represents in part the vital glycogen and brown adipose tissue stores which are laid down in the later weeks of pregnancy. These two substances help to combat the three most dreaded perinatal complications of hypoxia, hypoglycaemia and chilling, and hence protect the baby from brain damage. Furthermore, part of the weight gain is likely to be associated with the development of an immune system capable of defending the infant from infection. The well-known association of high perinatal mortality and cerebral dysfunction with LBW is likely to be due in part to these factors.

Our Group felt that we should draw attention to the importance of maternal weight gain during pregnancy, which should be at least 10 - 11kg. We also spoke of the value of food supplementation during pregnancy, preferably throughout the whole pregnancy to be most effective. Connected with this subject is the importance of education on nutrition, advice on farming, and advice on the redistribution of such nutriments that are available within the family. The most important person in the family is the pregnant or lactating mother, and she should be given priority. On another plane there is a need to achieve a better world distribution of food resources. Finally, the need for better nutrition is not confined to the developing world. Poor nutrition is not at all rare in developed countries, owing to mistaken policies such as dieting during pregnancy, and attention needs to be paid to this too.

Anaemia

This is intimately related with malnutrition in many instances. In others it is related to infection, particularly malaria, or hookworm, or to genetic diseases such as sickle-cell anaemia and thalassaemia. Some of these conditions are difficult to prevent like the last two, but hookworm, malaria and malnutrition can certainly be diagnosed and treated, and many forms of anaemia are amenable either to the treatment of the original disease or to supplements with iron and folic acid.

Infection

The third factor which interplays with the previous two is infection: the infected person is often malnourished and anaemic and the

malnourished anaemic person is often susceptible to infection. All have an important influence on growth before birth, during the childhood years, and on the eventual size of the mother. To some extent the size of the mother will determine the size of her babies. Therefore, it is doubly important to prevent and treat infection, as well as improve nutrition, right through early life into the childbearing years.

The infections that are most important on a worldwide scale are malaria, syphilis, tuberculosis, rubella, urinary tract infections, intestinal infections and infestations, and amniotic cavity infections. There is obviously a lot that can be done towards prevention and treatment, especially by education on improved hygiene, by better sanitation and the provision of safe water, by immunisation and by early effective treatment of diarrhoeal diseases.

Multiple Pregnancy

In the United Kingdom, multiple pregnancy occurs in 1 in 80 births. Because two babies are involved, and because half such babies are LBW, 1 in 6 of all LBW babies are twins. It follows that early diagnosis, whether by clinical methods or ultrasound, and the early application of appropriate therapy, including rest and adequate nutrition is important. Attention needs to be drawn to the impact that fertility drugs have had not only in developed countries but also in many developing countries. Too often these drugs are used in a very uncritical manner. Even in this country they may have a considerable impact on the incidence of multiple pregnancy. For example, of the last six sets of triplets seen by one of our Group, five followed the use of fertility drugs, and LBW babies resulted in every case. This factor may be responsible for a considerable proportion of LBW infants, especially the smallest ones.

Induced Abortion

Some countries, particularly those in the East of Europe, have found to their dismay that the incidence of LBW increased since the War. Thus, in Hungary the incidence of LBW increased from 7% to 12%. Workers in that country believe that this increase has been due mainly to cervical imcompetence following induced abortion leading to subsequent pre-term delivery. While this subject remains controversial we felt it important to underline the need to regard induced abortion as a failure of birth control

rather than as the first line in strategy. Our emphasis should be first on contraception, on menstrual regulation, and if termination becomes necessary, it should be performed as early as possible and with the minimal cervical dilatation so that the least damage is done to the cervical sphincter mechanisms.

Smoking

It has been established throughout the world that maternal smoking is associated with a reduction in mean birthweight (approximately 150gm) and a higher perinatal mortality (about 30%). Recently, Meyer and her colleagues, working with the Quebec data, have shown that not only do babies tend to be undergrown, but they have a significantly greater chance of being born in the second trimester following complications such as abruptio placentae, placenta praevia and premature rupture of the membranes (2). This is a tremendous challenge because smoking should, in theory, be preventable. However, our experience with education and propaganda in the United Kingdom has been a dismal failure in spite of a great deal of effort. Perhaps greater emphasis should be put on trying to prevent girls from taking up smoking at all (or boys for that matter) by educating children during their early school years (5-10 years age group). While it is obviously best not to smoke at all during the fertile years, stopping smoking at any time, even within a few hours of delivery, does confer benefit.

Hypertensive Disorders

These are associated with a significant degree of LBW, particularly of small-for-dates babies. Antenatal care should concentrate on antenatal detection of these infants and of other high-risk factors such as high maternal age and parity. Good regular antenatal care and screening of high-risk cases, with appropriate management, should be, and indeed is, a major part of obstetric strategy.

Socio-Cultural and Economic Factors Including Stress

This is a very complicated matter. There are so many factors and they vary from country to country. Study needs to be made of them in each country and of how they affect their own population. Whether it is a matter of dietary practice, of early marriage, of the use of drugs or other local factors, they need to be identified, and where possible overcome by education and persuasion. Coupled with these factors we need to mention stress.

As the population of the world increases, and as people become more and more crowded together in the slums of our large cities, stress has undoubtedly increased. Animal experiments have shown that under the stress of overcrowding, abortion and premature labour become commonplace. We suspect that the same may be increasingly happening throughout the world today. A recent study by Newton in Manchester showed that stress events were three times more common among women who gave birth before 30 weeks gestation than among women who gave birth at term (3). Stress need not necessarily be mental; it may also be physical.

Family Planning

This is an immensely important subject: the age at which girls marry, the size of their families, and the spacing of their pregnancies. Studies have shown that when the interval between deliveries is less than a year, there is a very sharp rise in both perinatal mortality and in low birthweight. The optimum inter-birth interval appears to be between 18 and 36 months. If the interval is longer than three to four years, then we again start to see a rise in low birthweight and perinatal mortality.

While it is not appropriate to discuss methods of family planning at this time, we should like to re-emphasise the importance of breast-feeding, both for its effect on the inhibition of ovulation and also because of the widespread cultural taboo against sexual intercourse with a lactating mother. Although it is a far from foolproof method of birth control, it is readily available and cheap and probably offers the single most effective means of family planning readily available throughout the developing world. We would like to emphasize the importance of education. This should be directed towards the 5 to 10 year olds, before they reach the age of sexual awareness, at a time when matters like human reproduction and birth control can be taken in their stride. The help of school teachers must be enlisted in this effort.

MANAGEMENT OF THE LBW INFANT

However much we try, LBW infants will continue to be born and we must therefore consider optimal management. First, though, it is necessary to explain that although the definition of LBW is satisfactory for developed countries, because of the very high LBW incidence in some developing countries it will sometimes

be appropriate to make a different and lower cut-off point such as 2kg. Otherwise care facilities will be overwhelmed.

High risk infants such as those of LBW should be delivered, whenever possible in hospital, or the next best place available. It is much better to refer the mother before delivery than the baby afterwards. If the latter is necessary then the baby should always be accompanied by the mother. Of course, it is no good transferring a baby to a hospital where there are expert obstetrical services but no paediatric services. If paediatric services are not available, then whoever is responsible for the obstetric services must also be prepared to provide paediatric care. Apart from trained medical and para-medical staff, Traditional Birth Attendants need to be trained in the care of both the mother and her baby, and particularly the LBW baby, after its return home with the mother. Perhaps most of all, though, we need to train the mothers in the care of their babies.

A second point we would stress is the importance, whenever possible, of avoiding sedation during pre-term labour. Sadly sedation is still sometimes mistakenly used in the belief that it will inhibit uterine contractions. Professor Caldeyro-Barcia informed us that there is good evidence that drugs like pethidine and morphia increase uterine contractions rather than diminish them.

Next, we would like to warn against the dangers of chilling. In the tropics, one must be careful not to deliver the baby in air-conditioned delivery rooms cooled down to 18°C. Pre-term babies are particularly vulnerable to chilling and whenever possible should be delivered in rooms warmed to 24° C to 25°C.

The mother and also the father should be encouraged to visit their LBW infant in the special care area and as far as possible help to look after him or her themselves. This may include changing nappies, feeding and in fact doing all the routine care. In this way they can not only relieve the nurses of some of their work, but can get to know their babies and become attached to them. Mother-child bonding is immensely important. And into this comes breast feeding. Breast milk is especially important to LBW babies because of their vulnerability to infection and failure to thrive. It should be started early and the breast offered frequently and on demand to the baby.

In summary, the LBW infant needs warmth, breast milk and protection from infection. After returning home, good hygiene, immunisation and the early treatment of any gastro-enteritis following weaning are all most important. Above all the child requires the love and care of its mother.

The resources for medical care are finite and therefore inevitably there has to be a cut-off point below which to salvage a very LBW infant are impractical or too expensive. Clearly this cut-off point will vary from country to country being as low as 500gm in some developed countries and as high as 1500gm in those with less resources and a different set of priorites.

References

1. Pre-Term Labour. Proc 5th Study Group, Royal College Obstetricians and Gynaecologists. Eds A. Anderson; R.W. Beard; J.M. Brudenell and P.M. Dunn 1977.

2. Meyer, M.R. and Tonascia, J.A. Amer J Obstet Gynec 1977; 128:494.

3. Newton, R.W.; Webster, P.A.C.; Binn, P.S.; Maskrey, N. and Phillips, A.B. Brit Med J 1979; 2:411.

TRAINING PROGRAMMES FOR STUDENTS, DOCTORS AND OTHERS IN COMMUNITY OBSTETRICS

CHAIRMAN: Professor R.H. Philpott

First, we decided that, because there would be detailed discussion on the next day on the training of midwives and traditional birth attendants, we would not discuss their training in the Discussion Group. Instead we would devote all our time to a discussion of the training programmes for medical students and doctors (postgraduates).

We then decided that following earlier decisions in the main Study Group, the subject under discussion should be Maternal and Child Health (MCH) rather than just community obstetrics. This ensures that for the mother and her new child there is a continuity of care. If this continuity is to be seen in practice, then the medical student must see it as such in his early training.

For the purpose of further discussion we felt that we could presume the type of structure for the MCH service that had been discussed earlier in the Study Group. This would include the following categories of health workers:

1. TBAs (Traditional birth attendants).
2. Community health nurses.
3. Trained midwives, including "enrolled midwives" (trained in midwifery only) and nurse midwives (trained in midwifery and general nursing).
4. Advanced midwives.
5. Doctors.

These people would be working in the following spheres:

1. Peripheral clinics.
2. Patients' homes.
3. Base hospitals.
4. Referral/teaching hospitals.

DEFINITION OF MATERNAL AND CHILD HEALTH

This definition can easily become very extensive, so for the purposes of discussion we had to have arbitrary cut-off points. Maternal and child health is really a part of a whole, the whole being the total health care of the community. The service must

meet the felt needs of the community in the area of MCH as well as covering the extent of service envisaged by the professional workers in the field.

Our definition is as follows: "The objective of maternal and child health is to provide health care for women of the child-bearing age and for children in early childhood".

THE CONTENT OF MCH CARE

i) Maternity care, which would include problems in early pregnancy, obstetrics, family planning, infertility.
ii) Child health and child care.
iii) Nutrition.
iv) Health education.
v) Educational methodology.
vi) Managerial skills and health administration.

UNDERGRADUATE TEACHING

Before defining the objectives for training we must define in detail the community needs that we must satisfy. This would take a considerable amount of time, which was not available to the Discussion Group. However, this has to be done and a further study group should be set up to determine these needs and then the objectives for training. Once that is done it would be possible to identify the knowledge, skills and attitudes that we would expect to develop during the training of undergraduate medical students. Included in knowledge and skills there would need to be content on epidemiology and health team management. Educational methodology is a very important subject as the students should learn how to pass on education on maternal and child health to other members in the team and also to the women of the community.

WHO SHOULD DO THE TEACHING?

This should be provided by a group consisting of an obstetrician, a paediatrician and a member of the Department of Community Health. We would underline the need for an interdisciplinary approach. In some medical schools the discipline of family practice (synonyms, family medicine or primary health care) is included in the Department of Community Health. However, in some places this is now a new discipline in its own right. Where this is so,

they would need to be included in this interdisciplinary approach to teaching MCH.

We discussed the ideal that is found in some medical schools where the whole curriculum in the Faculty of Medicine is problem orientated rather than system orientated. However, it was pointed out that this produces very serious staff problems as teaching staff need to meet together before, during and after the integrated teaching session and this takes up a considerable amount of time. It was decided that it was well worth starting an integrated programme in the handling of MCH by the Departments of Obstetrics, Paediatrics and Community Health. The demonstration by the teachers of an integrated teaching pattern emphasises to the students the need to regard this as an integrated whole in practice.

When Should The Teaching on MCH be Introduced Into The Curriculum?

The basic teaching should start right at the beginning of the course and it should then straddle each of the years of undergraduate teaching.

Where Should This Teaching Take Place?

The emphasis should be on teaching the students in the primary health care centre in the community. This is the most logical place for the bulk of the teaching to take place. This would of course be supported by background teaching in the medical school. There is considerable value in getting the students to be involved in family case studies and also to go into the homes of the women who they delivered in the clinics so that they can follow the progress of the newborn as it adapts to its environment and to breast-feeding. The reason why it is not always easy to implement this type of community training programme for medical students is that it needs a considerable amount of supervision and also the infra-structure of the service has to be well established. It was important that much of this training should be presented to medical students, midwives, nurses, community health nurses, etc. in a combined group. This again demonstrates involvement by the whole primary care team.

POSTGRADUATE MEDICAL TRAINING

Again, it is important to define the special set of needs that must be met by these postgraduates when they are trained and then to establish from this the objectives for the training programme.

Only in this way can we come to an accurate definition of the knowledge, skills and attitudes that need to be imparted in the training. We recognised three main groups of doctors that need to receive training. They are:

1. Those who are to become general duty medical officers. This is the most important group. It would also include general practitioners.
2. Specialists in obstetrics and gynaecology.
3. Doctors who are already working in the field and need a proper orientation towards MCH.

The General Duty Medical Officer

This doctor would need a thorough postgraduate training programme which could be co-ordinated by the Department of Community Health in the Faculty of Medicine. He would rotate for six-month periods through the different clinical departments in the Faculty. When he came to the Departments of Obstetrics and Paediatrics this part of his training would be integrated in the same way as outlined for medical students. During this part of his training he would need to have training in the clinical, organisational and educational aspects of maternal and child health, and be able to complete the management of each clinical problem that might be met whether complete facilities are available or not. The community needs in MCH must be taught in depth. We recognise the importance of eventually establishing a group of general duty medical officers who would continue to work in that area with a continuity that at present does not exist. We felt that if a very good training programme with suitable recognition was provided this would be an incentive for the doctor to stay.

RECOMMENDATIONS TO THE ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

i) We recognise that there are already combined training programmes between, for example, the RCOG, the British Paediatric Association and the Royal College of General Practitioners, leading to an acceptable RCGP training programme. This is directed to the provision of adequate training for the primary health care doctor in Britain. It was strongly emphasised that there is need to persuade the RCOG to continue a study group on the content of MCH and the establishment of a curriculum that would cover MCH in practice. If such a study group could

come up with a suitable framework for MCH in the developing world and details on its implementation, this would provide considerable support for those in different countries who are endeavouring to set up such a programme. At present the proposals of those working in the different countries are sometimes met with scepticism. This would change if a body like the RCOG was to establish a curriculum for MCH in the developing world in the same way as it has established a curriculum for the training leading to the MRCOG. This represents our most important recommendation.

ii) We recommend that the RCOG Council consider the establishment of an Institute of Maternal & Child Health in London. It is envisaged that the Institute should have a link with the London University and provide a training programme leading to a Masters' degree in MCH. Doctors coming from or going to the developing countries would attend this course and for those preparing for the MRCOG, it could be recognised as the required elective year. The Institute would be a resource centre for MCH in the developing world and would be in a position, if the correct personnel were recruited, to provide a consultant service to governments planning an MCH service and also a teaching service for those planning courses and conferences in the developing world.

iii) Time limited our further discussion and we were therefore not able to answer the very considerable problem of how to get specialists to have a better understanding of rural MCH problems let alone to get them to work in those areas. This difficult subject needs to be discussed in depth by the same continuing study group.

iv) Heads of Departments working in the developing countries need to be orientated to this modern concept of MCH. It was pointed out that the paediatricians have already attended to this by running a programme of orientation courses for paediatric teachers in the developing world. A similar programme needs to be established to get the same message across to obstetric teachers.

CHAPTER 7

PROVISION OF MIDWIFERY CARE

THE ROLE AND TRAINING OF MIDWIVES FOR RURAL AREAS

Miss B.E. Kwast

Many midwives are trained by dedicated professionals and a great deal of money is spent on such training programmes, but only a few of these midwives are working in rural hospitals and health centres to help the villages from which they originally came for training. Each country and each community will have to decide for itself the steps to be taken in the development of both Health and Training programmes according to the prevailing socio-economic resources and needs.

THE ROLE OF THE MIDWIFE

The sphere of practice of the midwife was defined by the Joint Study Group of FIGO/ICM in 1972 as follows: "she must be able to give the necessary supervision, care and advice to women during pregnancy, labour and the postpartum period, to conduct deliveries on her own responsibility and to care for the newborn and the infant. This care includes preventative measures, the detection of abnormal conditions in mother and child, the procurement of medical assistance and the execution of emergency measures in the absence of medical help.

She has an important task in health counselling and education, not only for patients but also within the family and community. The work should involve antenatal education and preparation for parenthood and extends to certain areas of gynaecology, family planning and child care. She may practice in hospitals, clinics, health units, domiciliary conditions or any other service."

Although this definition covers most aspects of the midwife's role, it seems necessary to elaborate on certain wider tasks which the multi-purpose fashion of her role requires in the rural areas. Other functions are that of:-

(i) team member: to work with other members of the health team in identifying the needs - physical, mental and social of the community, and to plan to meet these needs;

(ii) administrator: to organise the environmental resources and personnel towards the maximum provision of health care;

(iii) mediator: between the patient and the doctor, between the community and the health authorities to promote optimal functioning of the health services;

(iv) educator: to teach and supervise auxiliary nursing personnel, traditional birth attendants and students in training;

(v) leader: through contact with the elders of the community, influence the health care acceptance in the community and stimulate assistance towards improved health care facilities from within the community.

CATEGORIES OF MIDWIFERY PERSONNEL AND LENGTH OF TRAINING

The categories of midwifery personnel which are involved in providing basic health care can be classified into three groups:

Fully Trained Midwife

The existence of a higher, middle and lower cadre within this group is demonstrated, although this is not applicable to all countries.

a) The trained midwife is common to most countries of the world. In some countries it is a requirement to have nursing training before doing midwifery.

b) The nurse/midwife is fully qualified as a nurse and a midwife. The length of training varies in different countries and also according to the cadre.

c) The community midwife is a trained midwife with the addition of one year of public health nurse training but without full nurse training (not applicable everywhere).

d) The public health-nurse/midwife has in addition to nursing and midwifery training a qualification in public health nursing. Recruits for advanced training for supervisory teaching and administrative positions will be found in this professional group. Her main involvement will be organisation and co-ordination at district level.

e) The trained nurse, grade A (e.g. Tanzania) has an integrated training, comprised of general nursing, midwifery, public health and psychiatric nursing.

Auxiliary Midwife

She may have been a traditional birth attendant who has been given some training. In some areas where education is more advanced, the auxiliary midwife may have had more training in pre-natal and post-natal care in addition to perinatal care of mother and baby.

Traditional Birth Attendant (TBA)

The TBA is usually a highly respected member of a community and has much experience in the profession, or she may be a neighbour or relative who happens to be near at the time of delivery and renders assistance. The contribution of TBAs in the health care delivery programme is considerable.

DISTRIBUTION AND WORK OF MIDWIVES IN A DEVELOPING COUNTRY

The urban areas are usually well served by trained midwives but the further one moves into the rural areas the lower the ratio of midwives to population. For the whole of Nigeria the ratio is 1 midwife to 5,882 population. This compares favourably with the figure used for manpower planning in developing countries of one midwife to 5,000 population. In a typical rural area (Ohafia/Arochukwu Local Government Area) the ratio is one midwife to 25,605 population.

In Imo state of Nigeria where I am working, about 80% of the population live in rural or semi-rural areas. It is estimated that only 25 to 30% of deliveries in this rural area take place in hospitals and health centres, and about 3% of domiciliary deliveries are conducted by professional personnel. Maternal, perinatal, and infant deaths are registered only if they occur in institutions and do not reflect the overall picture. The estimated statistics for this area are: maternal mortality rate, 10-40 per thousand registered live and stillbirths; perinatal mortality rate 72 per thousand registered live and stillbirths; infant mortality rate 178 per thousand live births.

As an example of the volume of work done by one midwife in a rural area in Nigeria the following statistics are provided from the Isiama Rural Health Centre, serving a population of 69,653. In the twelve months of 1978, one midwife conducted 719 deliveries,

thirteen abnormal deliveries, eight breech, five twin deliveries and performed 156 male circumcisions. During that year she had 6,070 antenatal visits, 520 post-natal visits, 4,044 attendances at the under-fives clinic and carried out 1,447 immunizations. Thus, the work of one midwife in a health centre is tremendous. She works under great pressure and often round the clock, yet her hard and dedicated work does not effectively reduce the high maternal and perinatal mortality in the population at large.

THE TRAINING OF MIDWIVES

Attitude to Training

Childbirth is regarded as a natural process and the need for trained midwives is not always appreciated in the community. As the service becomes accepted, every nurse/midwife should be prepared to provide basic health care to all people whether in an urban or rural community. There is a trend in many countries to integrate nursing, midwifery and public health into one training programme in recognition of the fact that the midwife must fulfil a broader function, particularly in rural areas. The future midwife must be interchangeable between hospital and community. In this way we can get away from thinking of specific categories of nurse/midwife. This interchangeability will succeed when the teaching programme and its application are related to objectives.

Until recently the education of health personnel has been centred on the hospital, yet the greatest need is the prevention of disease and maintenance of health in the rural community where the greatest percentage of the population lives. Whether the midwife can be trained in the rural area depends on:

a) types of training institutions available
b) vocation of institutions
c) category of midwife being trained
d) training programme to be executed
e) support of available medical and nursing staff

Relation of Training Institution to Cadre of Midwife

HIGHER CADRE MIDWIFE. In University Teaching and Specialist General Hospitals, the higher cadre midwife is trained only for urban work unless it is arranged that she spends some part of her training in a rural area. When given this rural experience the nurse/midwife becomes aware that she

is both a member of the health team and part of the community and health set up. In an environment without available medical aid, she receives the necessary experience, which will help her to make the decisions expected from her after her training. As this cadre of midwife will eventually - with or without further public health training - supervise and direct the different cadres of rural health workers, she needs a good understanding of the needs of the rural community. Unfortunately, the training institutions in the rural areas often lack the facilities and support of medical staff to comply with training requirements. The midwife trained in a University Teaching or Specialist Hospital may not always gain as much experience as her counterpart trained in a peripheral hospital because medical students, housemen and specialists in training will often have priority.

MIDDLE CADRE MIDWIFE. The middle cadre midwife (grade 2, Enrolled) are usually trained in peripheral areas and can function very well without medical aid after completion of their training. There is a trend to raise educational requirements for entry into training and this has resulted in the following problems:

1. The middle cadre midwife with a higher education may be less content in a rural area or may move to an urban area after marriage. She may find difficulty in coping in higher institutions or become unemployed in urban areas.
2. Some countries are abolishing the middle cadre midwife to raise educational and professional standards. This would seem to be a retrogressive step.

THE COMMUNITY MIDWIFE. This midwife has two years of midwifery training plus one year of public health training. The theory may be taught in urban Schools of Health Technology with semi-urban or rural health centres as practice areas. These schools are a good base for the functioning of the future health team as health care is best delivered by a team trained together and which can work in harmony. Whenever possible, these health workers should be taught simultaneously. It is less costly and makes more efficient use of the available number of highly qualified teaching personnel. However, with the present concept of training a "multi-purpose" health worker, the community midwifery training is being phased out in some countries.

The Syllabus

As long as a distinction between "care" and "cure" exists and the opinion remains that the nursing/midwifery profession is a "caring" profession only, the midwife will not function confidently in the rural area. If the word "care" is taken to mean "observe, appraise, assess, identify, implement and evaluate", then these words must be substituted in the rural area to mean "diagnose, treat, prevent and know your limitations".

The training programme should be related to the needs and resources of the society and based on a job description of the midwife. Only then can educational objectives be defined. These can be achieved if:

(i) professionals with long practical experience in rural areas are consulted when programmes are reformed;
(ii) nurse educators who are trained abroad familiarise themselves with and adapt to the needs of the country;
(iii) aspiration to attain reciprocity between countries is diminished, as it necessitates learning subject content unrelated to the local situation;
(iv) acceptance that the most efficient nurse/midwife is best trained in her own country where the real situation and needs can be recognised;
(v) legal cover is given to the midwife to perform the locally prevalent tasks. This requires mutual respect between medical and medical/allied professions and recognises that both are essential;
(vi) good team work between obstetricians and midwifery tutors, whereby the obstetrician extends his teaching and support to the field.

Unless each section of the syllabus states the curricular objectives, the extent of the subject content is left to the interpretation of the tutor and lecturer. This interpretation will be influenced by his or her own background of training and the environment in which she is currently working. Without the learning objectives laid down, the tutor in a sophisticated training institution may not question whether the subject content is relevant to the rural area.

Obstetric Emphasis in Rural Areas in the Developing World

The following is expected of the midwife working in a rural community:

ANTENATAL CARE

1. Seek out the pregnant women during home visits to other members of the family.
2. Education about the importance of antenatal care is vital. For this to be successful, the midwife should be convinced that it is important and worthwhile.
3. Where ill health is much more prevalent, priority must be given to correction of faulty nutrition and treatment of endemic disease.
4. The midwife assesses the patient's general condition throughout pregnancy and treats medical conditions for which she has been trained or selects high-risk cases for referral.
5. She will anticipate difficulties in labour and select women for hospital confinement.
6. She should be confident in the procedure of external cephalic version.
7. Administration of routine prophylactic therapy and haematinic drugs.

LABOUR

1. Knowledge of the progress of labour, using the composite partograph which will help in the early recognition of cephalopelvic disproportion.
2. Competence in breech and multiple deliveries, third stage management and prevention of post-partum haemorrhage, performing and suturing episiotomies.
3. Perform vacuum extractions, assist with Caesarean sections and other operative deliveries, give first-aid treatment and resuscitation to cases where there has been unskilled obstetric interference before admission to hospital, perform manual removal of the placenta in emergencies.

THE NEWBORN

1. Competence in endotracheal intubation.
2. Perform male circumcision.
3. Expert knowledge of the care of low birthweight infants.

MATERNAL AND CHILD HEALTH

The midwife's role is extended beyond the 28 neonatal days when she is responsible for the infant. When taking care of the under-fives she is expected to know about -

1. Growth and development.
2. Prevention and recognition of communicable diseases.
3. Diagnosis and treatment of minor illnesses.

She also participates in the family planning services.

Selection of Midwives for Rural Areas after Qualification

The usual desire is to keep the best midwives in the training institutions to support the teaching staff, particularly in the clinical situation. However, a very good midwife will more easily maintain a high standard of practice when working in isolation.

Motivation of Midwives working in Rural Areas

1. They should be encouraged by regular visits of the senior midwife from the peripheral hospital when problems can be discussed. Occasionally clinics are conducted under supervision or the supervisory midwife may stay several days in the outlying rural area, thus ensuring that a good standard of practice is maintained.
2. Midwives should be rotated between peripheral hospitals and rural health centres.
3. Visits by the regional obstetrician.
4. In-service training or symposia.
5. Nationwide refresher courses or seminars.
6. Showing appreciation of her work.
7. She should be given higher wages as an incentive, particularly because she carries more responsibility, has more difficulties with which to cope and works longer hours than her hospital based counterpart.

SELECTION OF STUDENTS

The return or retention of midwives after qualification to or in the rural areas is a matter of great concern. Even when there are more secondary schools in rural areas, it is doubtful whether a greater percentage of midwives with a background of full secondary education will remain in the rural areas.

It is recommended that a middle cadre manpower be retained for the rural areas by admitting women with a lesser educational background to training. This would provide for a motivated person to attain a more practical type of training, e.g. enrolled or grade 2 midwife.

Older married women seeking admission to training in the rural areas will remain there after qualification. These women with minimal educational background would form the lower cadre midwives, e.g. grade 3 or TBAs. These are the women that the isolated rural communities need. Language barriers are thus obviated and the indigenous people in the rural areas accept with confidence midwives who are familiar with their customs.

EVALUATION OF THE MIDWIVES IN THE WORKING SITUATION IN THE PERIPHERY

Follow-up assessment of the midwives in their working situation is invaluable both for the tutor and midwife. It should not be a single effort, but an annual component of the tutor's task. The midwife tutor should be encouraged and supported by the central authorities to effect such a follow-up scheme for the following reasons:-

(i) determining success or failure of midwives' performance
(ii) feed-back to tutor by midwives' opinion
(iii) highlighting shortcomings in instructional objectives
(iv) identification of problems to stimulate change and improvement
(v) moral support for midwives working alone
(vi) motivation by showing continued interest
(vii) protection of the society
(viii) school/public relations

Evaluation is directed towards a specific goal, i.e. improving the effectiveness and efficiency of the training programme.

THE TEACHING STAFF

It is important that the potential midwife tutor is familiar with the situation in her own country and it is preferable that she attends a course leading to the tutors' diploma in that country. The standard and competence of the midwives depends to a considerable extent on the quality of teaching and supervision. If the nurse/midwife practitioner is to be regarded as a "multi-purpose worker", then the midwife tutor should receive a common basic course together with teachers of nursing and public health. The tutor should spend as much time in teaching in clinical practice as in the classroom.

Good team work between the obstetric and teaching department is essential as unified teaching will increase the skill and confidence of both qualified staff and students. In addition to the midwifery tutor, it is essential to have clinical instructors as the ward staff are usually seriously overworked.

CONCLUSION

Let us face the challenge of the rural areas and the role of the midwife by pondering on the following:

(a) improving the socio-economic situation which will enable the midwife both to live and work in the rural area;
(b) answering the practical needs of the midwives in isolated areas by better communication with and understanding by the central authorities;
(c) providing an effective referral and support system;
(d) facilitating the training of midwives in the rural areas by making basic requirements realistic;
(e) recognition of the middle and lower cadre midwife to close the present gap. They are giving a service and want to learn;
(f) relating education to objectives. Provision of textbooks applicable to the country;
(g) rationalising legislation to take account of the midwives' actual multi-purpose role;
(h) creation of opportunity for continuing education;
(i) raising salary structures as an incentive for the midwife in the rural areas.

IN-SERVICE TRAINING OF COMMUNITY BASED MIDWIVES

Dr. S. Ross

In many countries community based midwives are fulfilling a large and increasingly important role in the provision of obstetric care to women. Despite this their basic training may not be geared to equip them for this task and their on-going training is often neglected. The more peripherally they are situated the greater their needs yet the guidance and help provided is frequently in inverse proportion to distance from a major centre. Experience in rural and urban communities in West, East and South Africa makes me convinced of the importance and value of some sort of ordered on-going training programme for community based midwives working from a peripheral clinic.

TRAINING (educational) OBJECTIVES

It is important to have clearly defined objectives. Maher has stated "if you are not certain where you are going you may well end up somewhere else and not even know it".

Ideally the training objectives will be based on a study of community obstetric health needs and the short-fall between those needs and the services currently being provided. In practice it is not possible to assess fully community obstetric care needs but certain aspects can be investigated. Examples follow -

a) A Perinatal Mortality Study

This should identify the prime cause that initiated the course to death, associated factors and preventable factors for all the major causes of perinatal death. Ideally this should be a continuous process. In practice it may only be possible to organise a comprehensive cross-sectional perinatal mortality study. In some circumstances even this may not be possible but the very least should be an analysis of the clinical data associated with each perinatal death with a regular review to recognise major preventable causes of death and possible trends.

For example, one comprehensive cross-sectional study showed syphilis as an important cause of perinatal death. An attempt

was made to reduce the incidence of deaths due to syphilis by instructing midwives in the diagnosis and treatment of syphilitic infection rather than management by referral to a special clinic with consequent delay in the initiation of treatment. In another survey clinical data associated with perinatal deaths showed that the perinatal mortality rate associated with infants born before admission (BBA) to the clinic was $2\frac{1}{2}$ times that of infants born at the clinic. A changed emphasis on health education was able to reduce the BBA rate to less than one third of the previous level.

b) Survey of Community Attitudes to Health Services

This may well lead to evidence of a communication gap between the consumer and the health personnel resulting in the need to include skills in communication in the training programme and a greater emphasis on attitudes.

For example, one study conducted in an urban community showed general satisfaction with a community obstetric service provided by midwives but showed criticism of aspects of health education, "they told me nothing, except when to come again".

c) Analysis of Commonest Medical Problems in Pregnancy

This will probably reveal that the vast majority of complaints are encompassed by a small number of diagnoses of major symptoms which, after training, the midwife can cope with.

A study of 1,000 consecutive medical problems in pregnancy showed that over 90% were encompassed by 12 diagnoses or symptoms. For the majority of these it was possible to provide a protocol of mangement which midwives can be trained to use with satisfactory results.

d) Task Analysis of Physicians in an Antenatal Clinic

This may reveal that a percentage of a physician's work does not require the skill of a physician but could be included with that of the midwife.

e) Regular Review of Referrals

Review of referrals from peripheral clinic to hospital and assessment as to whether referral was indicated, adequately managed and sent at the optimal time.

In a review of over 3,000 referrals prior to in-service training it was possible to detect a large percentage of unnecessary referrals under indications such as hypertension, bad obstetric history, low haemoglobin, third stage complications, etc., and delay in referral associated with fetal distress. Provision of protocols for management and in-service training led to a reduction in hospital referrals and a lowering of the clinic perinatal mortality rate from 28/1,000 to 5.3/1,000.

f) Field Trials of Protocols of Management to Assess Appropriateness of the Protocols

If modification of methods of management prove to be an improvement then midwives must be trained in their use. For example emergency management of cord prolapse by distension of the bladder has lead to a lowering of the perinatal mortality and morbidity associated with this problem. Midwives will subsequently need to be trained in the correct use of this method of emergency management.

g) Task Analysis of Midwives

A detailed analysis of midwives' performance to see what they actually do and how their patient care could be improved.

On the basis of these and other studies, together with the generally accepted view of the role of a community based midwife, learning objectives can be established with an emphasis relevant to local needs.

ENTERING BEHAVIOUR (pre-requisite level)

Midwifery certificate with at least six months midwifery experience in past two years. Recent reading of a suitable obstetric text. Recommended "Obstetrics, Paediatrics and Family Planning" Ed. R.H. Philpott.

COURSE OBJECTIVES

At the end of her in-service training programme the midwife will be able to accomplish the following tasks with confidence, competence and enjoyment.

1. Provide primary care (and in defined instances secondary and tertiary care) for pregnant and parturient women and their new born infants including those at high risk.

2. Communicate the skills and knowledge required for optimal personal health for the mother and her child.

3. Continue developing the ability to learn and be responsible for her own learning.

4. Communicate newly acquired knowledge, attitudes and skills to her colleagues.

5. Use established and innovative technology to improve health care.

6. Develop and apply research skills to study and solve problems in midwifery and neonatal care.

These learning objectives require sub-division into intermediate objectives, each of which is again sub-divided into specific objectives (1). The specific objectives need to be relevant to the intermediate objective, clear, within the competence of the midwife, and able to be observed and measured. In order to prevent the training programme becoming unbalanced with an undue emphasis in the accumulation of knowledge it is important to design specific objectives which relate to the cognitive area (recall of facts, interpretation of data, problem solving), the affective area and psychomotor skills.

TRAINING PROGRAMME

The programme is probably best conducted during regular clinic supervisory visits. In-service training programmes which consist solely of lectures with or without discussion seem to produce little improvement in work practice. Various methods of training can be employed. These include -

a) Regular Provision of Feed-Back on Referred Patients

For this to be viable a record chart which includes antenatal, intranatal, postpartum and paediatric information is essential. Such a record is utilised in the clinic, used as the referral "letter" for the patient and is completed in the hospital. It is returned to the clinic. Selected records should then be discussed

with the midwives in an atmosphere which helps them to learn. An ideal way of doing this is by using small group discussions. Midwives are given a patient's record to study, to discuss within the group and then to reach firm conclusions concerning the management. This method stimulates active involvement by all members of the group, and encourages the ability to discover for oneself and from one's peers. It also provides the opportunity for self evaluation as the records of patients for whom the midwife has cared, are reviewed.

b) Involvement in Preparation and Revision of Protocols for Patient Care

It is essential to provide clear guidelines for the management of problems within the clinic and the indications and procedures for referral. If midwives have a part to play in the preparation and modification of such protocols they are more likely to remember and put into action their provisions.

c) Provision and Educational (learning) Objectives

Maher has stated "if you give each learner a copy of their learning objectives you may not have to do much else".

d) Involvement in simple research programmes, with regular feed-back on results obtained.

For example, studies can be designed to assess weight gain in pregnancy, changing practises with regard to breast feeding or the use of traditional medication.

e) Maintenance of Morale

The introduction of regular in-service training will help to maintain morale. Other methods will depend on the circumstances.

f) Other Traditional Methods

Consultations, demonstrations, lectures, provision of notes etc.

EVALUATION

A training programme can be assessed on the effect it has on the service or on the individual.

Effect on the Service

Many other factors will obviously be involved in the outcome on the service to a greater or lesser degree. Despite this the following may give some indication of the effectiveness of a training programme:

(a) perinatal mortality and morbidity.
(b) appropriateness of referrals from clinic to hospital.
(c) utilisation of clinic.
(d) surveys of breast feeding practices.
(e) surveys of community to determine consumer satisfaction.

Effect on Individual

It is important that individual assessment should be as non-threatening as possible otherwise it may be associated with loss of morale and thus be counter-productive. Self-evaluation in discussion groups, based on the records of referred patients, has already been referred to.

Multiple choice questions can be used both to assess knowledge gained and as a means of learning. Changes in attitudes can be measured by using self-evaluation questionnaires which are then discussed with the individual.

CONCLUSIONS

It is not possible to lay down a detailed training programme appropriate to all circumstances. It is hoped that this discussion of the subject of in-service training of community based midwives may stimulate further thought and action on this important subject.

Reference

1. Guilbert, J.J. Educational Handbook for Health Personnel. World Health Organization, Geneva 1977.

COLLABORATION BETWEEN THE OBSTETRICIAN AND MATERNAL AND CHILD HEALTH AIDES IN TANZANIA

Dr. R.L. Evans

Tanzania is a country 363,000 square miles in size, which in European terms is roughly the area of France and Spain put together. The population at the last census in 1978 was estimated to be 17.5 million and the crude birth rate is now about 47 per thousand. With a 16% infant mortality rate in the country and a further 9% of the children dying before their fifth birthday, the Population Growth Rate is estimated to be 2.8%. Of the 700,000 mothers giving birth each year, it is estimated that 60% attend an antental clinic on at least one occasion during the pregnancy, but that a little under half of these will have an institutionalised delivery. The Maternal Mortality Rate throughout Tanzania in all such institutions (Hospitals and Health Centres) is 2.5 per thousand, but figures are not available for the majority of mothers who deliver at home with no trained attendants.

HEALTH SERVICE ORGANISATIONS IN TANZANIA

Tanzania is divided administratively into 20 regions and each region is further divided into districts (generally 4 to 6), in which there is either a District Government Hospital or a Voluntary Agency Hospital designated (and subsidised) to act as the District Hospital. Such hospitals have between 100 and 200 beds and will refer their more complicated clinical problems to the regional hospitals which are generally bigger, better equipped and better staffed, although few enjoy the services of a Consultant Obstetrician.

Consultant services are at present confined to the national referral hospitals of which the largest, associated with the University Faculty of Medicine, is located in Dar es Salaam. One hospital at Mwanza serves the north west, whilst the north east is served by the Moshi Hospital. The British Government is undertaking an extensive re-building and enlargement programme of two hospitals in Mbeya to serve the southern regions and give Tanzania its fourth consultant hospital.

Within each district there are a number of rural health centres which, on average have about 30 beds, some of which are for maternity services. There is a small labour ward and nursery, where uncomplicated deliveries are conducted. Ideally, such units should have a Land Rover in which patients may be transported to the nearest hospital, and which may also be used to supervise the work at the dispensaries in the area covered by the health centre. These dispensaries vary in size, the bigger ones being bedded for maternity cases. They are intended for a rural population of about 10,000 living within a 5 mile radius.

HEALTH PERSONNEL

The obstetric specialists in Tanzania generally work from the consultant referral hospitals, being involved closely in the training of the various cadres of medical under-graduates and post-graduates, medical assistants and grade A nurse/midwives. The maternity wards in the District, Regional and Voluntary Agency Hospitals are usually supervised by medical officers with the ability to perform complicated vaginal deliveries, Caesarean sections and manual removals of the placenta.

At the rural health centres, the medical assistant is usually in charge of the maternity ward, supervising the normal deliveries and attempting to predict, at an early stage, those mothers in whom the progress of labour will deviate from the normal pattern. Such medical assistants have a four year training period, with a strong emphasis on antenatal and intrapartum care; many of them will have performed ventouse extractions under supervision during their training or during their subsequent probationary attachment to a hospital, in addition to dealing with third stage problems. At the rural dispensaries the rural medical aide in charge, who has received a three year training, will be able to recognise the signs of a disturbed pattern of labour, and should have been able to select those patients whose past obstetric history, physical features or progress through pregnancy indicates a hospital confinement.

These, therefore, are the 'obstetricians' of Tanzania and at each level of care their training and ability is complimented by the nursing staff whose duty it is to care for the mother during pregnancy and labour. In the hospitals there is usually a grade A nurse/midwife in charge of the labour ward and the antenatal clinic who has received a four year training after completing secondary school. The training centres for these nurse/midwives

are located at the consultant referral hospitals and the standard is equivalent to the SRN/SCM qualifications in Britain. At the rural health centres the maternity services are usually cared for by a grade B nurse/midwife, who has received a three year training, commonly at one of the long-established training schools attached to the Voluntary Agency Hospitals in Tanzania; this training can be viewed as being equivalent to the SEN qualification.

At the dispensary level the Maternal and Child Health (MCH) Aides offer comprehensive maternal and child care facilities. Such personnel are recruited from the Primary School leavers and are trained for a period of 18 months at a regional MCH Aide School in antenatal, intrapartum and postnatal care, in addition to preventive and simple curative paediatric measures, along with family spacing techniques.

HISTORY OF THE MCH AIDES IN TANZANIA

In 1973 the cadre of MCH Aides was introduced as a part of a nationwide programme to improve maternal and child health services in the rural areas. Training Schools were built in each region of Tanzania, usually away from the regional administrative centres in order to ensure familiarisation with the conditions that would later be encountered in a working role. These Schools were designed to take 30 students for the 18 month course, although in the early years a number of the younger serving 'Village Midwives' were taken in for an accelerated 9 month course, and attached to each School was a model MCH Clinic where the students worked in the daily antenatal and child care services offered to the local population. Before the construction of the Schools a training programme for the identified tutors was instigated; the more senior nurses were sent to a School of Public Health in California to follow courses on MCH administration, epidemiology, biostatistics, family planning methodology and allied subjects. These nurses then returned either to administrative positions in the MCH Unit of the Ministry of Health, or as senior tutors in the training unit for the MCH Aide School.

The Schools gradually opened up, the first in 1974 and the last was completed in 1977, but already two problems have emerged. The first concerns the ability of Primary School leavers to handle a fairly intensive 18 month course; plans are now in hand to make the course a full two years, and devote the first six

months to familiarising the students with the methods of teaching, the language of the subject and generally brush up on the reading and writing skills. The second problem, and more difficult to deal with, concerns the future locus of service of the MCH Aides trained in the Schools. Ideally, these girls should be working in dispensaries or health centres alongside a rural medical aide, running both static services and mobile MCH Clinics. However, nature has taken a hand in the programme in that young girls throughout the world on training courses 'lightly turn young man's fancy to thoughts of love'. Thus many of the MCH Aides are married to men who have positions in towns, or even in the larger regional centres, with the result that their services are no longer available to the rural population for whom they were primarily trained.

One answer to this second problem would be to recruit young married women from the villages that are to be served by the services, and this, along with other suggestions is currently being considered.

THE FORM OF COOPERATION BETWEEN THE OBSTETRICIAN AND MCH AIDES

Collaboration in the programme

In 1973 the Ministry of Health declared its intentions to implement a National MCH Programme and a large sum of money was set aside for the printing of MCH stationery relevant to rural health services. It was decided that an integrated MCH Programme be established with all services on the same day under the same roof, and that new stationery be designed for each of the three main components. Accordingly, a meeting was called to bring together obstetricians and paediatricians from the three Consultant Hospitals to discuss the plans for the programme and to design new patient-held records. With this latter goal in mind, the cards had to be both self-instructive for the patients or mothers, and action-orientated for the staff.

The translation into Swahili was easy enough, although the space needed far exceeded that taken by the original English. The action-orientation was directed towards the Rural Health Centres as the next stage in the 'health pyramid' rather than 'refer to a doctor' at the first sign of trouble. The 'at risk' factors were arranged into groups of severity both in the profile

taken at booking the patient and in the progress through the pregnancy. A record of the onset, progress and outcome of the labour was included in the card, with a detachable section summarising the events, which could be torn off and handed to the mother for reference in future pregnancies. In Tanzania regular and reliable supplies of stationery to the rural health units have been a problem for many years, and it was hoped that by the use of stiff cards for a patient-held record system during the antenatal period, the records would invariably be present for the antenatal attendance concerned (in a situation where appointments and return dates depend on the state of the roads and transport as much as on the patient's volition) and would also be available to the staff of the unit where the mother chose to deliver. The inclusion of a section to cover the events once labour had started was, therefore, a natural extension of the usefulness of the card. The whole system now needs to be carefully evaluated, but for what impressions are worth, it became apparent, even in the early days of the new system, that the mothers were meticulously careful about looking after the card and taking it with them for antenatal attendances and delivery.

The following are the 'at risk' factors for which the MCH Aides are trained to be vigilant:

BOOKING PROFILE:

Younger than 16 and older than 35 years	) all to
Height less than 150cm	) deliver
Limp or Polio leg	) in a
Gravida 8 or more	) Health
Operative delivery with the last pregnancy	) Centre or
Third stage complications with last delivery	) Hospital
Ten years or more since last pregnancy	) all to attend
Abdominal operation since last pregnancy	) a Health
Stillbirth or Neonatal death in last pregnancy	) Centre or
More than one stillbirth or neonatal death	) Hospital before
Habitual abortions	) next visit

ANTENATAL PROGRESS:

Blood pressure above 140/90	) all to be
Proteinuria	) referred
Gross oedema	) to a Health
Antepartum haemorrhage	) Centre
Suspected intrauterine death	) or to a
	) Hospital

Uterus large for dates	) all to be
Suspected postmaturity	) referred to a
Unstable lie or malposition	) Health Centre
Mother wishes puerperal sterilisation	) or to a
Intercurrent illness	) Hospital

INTRAPARTUM PROFILE & PATTERN:

Spontaneous onset of labour or rupture of membranes before 34 weeks	)
Malposition in labour	) Refer
Antepartum haemorrhage	) urgently
Fever higher than 38°C	) to a
Blood pressure above 140/90	) Health
Ruptured membranes for more than 12 hours	) Centre
Strong contractions for more than 12 hours	) or
Fetal heart above 160 or below 120/min	) Hospital
Meconium stained liquor	)
Failure of cervical dilatation (less than 1cm/hour)	)

PUERPERIUM:

Retained products of conception	) Refer to
Offensive lochia	) a Health
Post-partum haemorrhage	) Centre
Fever above 38°C	) or Hospital

The purpose of such a detailed consideration of an antenatal record card in use in rural Tanzania is to underline the importance of the dissemination of relevant knowledge by obstetricians in developing countries, and the applicability of such knowledge to the working conditions in the rural dispensaries and health centres in the country. With no more than a couple of dozen qualified obstetricians in the country it is clearly impossible for these specialists to work alongside the MCH Aides in their rural situations, and only a few regional medical officers benefit from the services of an obstetrician near at hand. However, by a careful presentation of the guidelines for good antenatal care, vigilant intrapartum observations and good puerperal nursing, those mothers who are most likely to inflate the maternal and perinatal mortality and morbidity statistics can be selected out for a higher standard of care and supervision.

The card is composed and set out in such a way that the MCH Aide is at once aware when a mother falls into this high risk category and she then refers her either to a Health Centre,

where she can be assessed by the Medical Assistant who has access to transport should further referral be indicated, or to a nearby hospital. Other features of the card concerning health education, active immunisation in pregnancy, malaria prophylaxis and iron/folic acid therapy in pregnancy are presented in such a manner that the mother can share the importance of these aspects with the MCH Aide.

It will be seen that the intrapartum section does not reflect the degree of action-orientation that is apparent in the antenatal section, and doubtless some would question why a partogram was not incorporated into this section to answer that very need. At the time that this card was being planned the partogram was in operation in the three main Consultant Hospitals in Tanzania, with a plan to extend its use to District and Voluntary Agency Hospitals, and possibly later on to certain of the larger Health Centres, close to newly designated District Administrative Centres (i.e. where a District Medical Officer was stationed). It was our experience at Mwanza, using the partogram both in the large referral hospital, and on a trial basis in rural hospitals and rural Health Centres, that its accurate completion requires a level of education concomitant with at least two or three years of secondary schooling. It was an impression gained that the five parameters of irregular fetal heart rate; meconium staining of the liquor; failure of cervical dilatation; prolonged uterine hypertonicity and ruptured membranes for longer than 12 hours were more accurately observed as YES/NO questions than as graphical presentations. The partogram has been successfully introduced into the larger Hospital Maternity Units in Tanzania, and its value is indisputable, but it was considered to be inappropriate for inclusion in the syllabus of the MCH Aides.

Collaboration in Teaching and Training

The direct involvement of specialist obstetricians in the teaching, training and practical working aspects of the MCH Aides is much less than that seen in the foregoing section, but if one considers the relative scarcity of such highly qualified medical staff in a country like Tanzania and the fact that the bulk of the hospital obstetrics is handled by competent and experienced Medical Officers, then the involvement of such "obstetricians" in the MCH Programme is apparent at all levels.

The general policy of the Ministry of Health was to establish the new MCH Aide Training Schools in the rural areas, away from the Regional Administrative Centres, and thus most of the schools are located at fairly isolated District Centres, where the services of the District Medical Officer and his staff are available for the various administrative problems that invariably arise.

The schools are staffed by two Tutors, who have attended a special training course, and they conduct most of the teaching and field experience; in this they are supported by other nursing staff, usually from the nearby District Hospital or local Voluntary Agency Units. Invariably the services of a Medical Officer are also available to the School, and as a rule this is the doctor who supervises the Hospital antenatal clinic and maternity ward. The MCH Aide students will work from time to time in both these locations for practical experience, although emphasis will, correctly, be given to their participation in mobile MCH Clinic work and their attachment for periods of time to Rural Health Centres in the District.

Throughout their training the MCH Aides are constantly exposed to the principle of total integration of MCH Services, namely one clinic for mothers and children to answer all needs every day of the week, and this has been greatly assisted by the wise decision to incorporate a model MCH Clinic with the MCH Aide Training School buildings. This ensures that the MCH Aide students are able to practice such integrated MCH care whatever the situation in the local District Hospital. Further, it has the advantage that such external obstetric assistance in teaching is brought to "their" clinic in "their" school, rather than the MCH Aide students being the strangers in an overcrowded District Hospital Clinic. For girls who have just completed their Primary Schooling this is an important asset in being able to relate to doctors. The intrapartum care and the puerperium will, of course, be experienced in the Hospital, but by that stage the student will know the mothers, the staff of the wards and also the obstetrician supervising the unit.

Throughout the training the student is constantly made aware of those factors during pregnancy, labour or the puerperium which should make her refer the patient to a Health Centre or Hospital. The prevention of anaemia and malaria during pregnancy is constantly emphasised in all teaching and the duty of the obstetrician participating in the training programme will be to ensure

that those "at risk" mothers are recognised during the antenatal period, the appropriate advice given and the correct action taken. In addition, by teaching in the labour room and the post-natal ward, the complications of labour can be demonstrated, their effect seen and the possible preventive measures discussed. This cadre of health worker, perhaps more than any other in Tanzania, is trained far more in the preventive field than in the executive/clinical field.

Working Alongside MCH Aides

Again, such participation is far more a feature of those obstetricians serving the smaller hospital in the country, than those in charge of the Obstetric Units at the large Consultant complexes. As has already been pointed out, the majority of the MCH Aides are intended to work in the rural dispensaries and health centres and the fact that this has not been realised for various reasons has meant that many MCH Aides are now working alongside obstetricians in many hospitals throughout the country, including even the larger referral Hospitals.

The situation in Mwanza Region in the early 1970s was fairly typical of that found in other regions at the same time, namely that the bulk of the MCH services were offered by the Voluntary Agency Units. Such a coverage was not achieved by running model, well-attended clinics within the confines of the hospital (which, in contrast to Government Hospital, charged for services) but through the medium of Mobile MCH Clinics. Such Units were usually in the position of receiving funds from charitable organisations in Europe to provide vehicles and running costs for such services, and usually the Medical Officer from the hospital accompanied such expeditions. Such Mobile MCH services were difficult to evaluate but one had the impression that there were several areas of inadequacy. The Clinics were often held at a Government Dispensary and whilst high charges were avoided, the actual Clinic Staff were seldom involved in the establishment and organisation of the Clinic; the mothers rapidly developed the habit of attending only on the days when the Mobile Clinic visited the area; there was an unbalanced concentration on the Under Five population, often to the neglect of the mothers who were ultimately responsible for the care of that population, and health education was neglected in favour of food supplements.

Clearly, the Ministry of Health also appreciated this problem when in 1976 there was a policy designed to encourage the mobile teams (90% of which emanated from Voluntary Agency Hospitals) to shift their responsibility to the staff of the health units visited, as such units became equipped with refrigerators, scales, sterilising facilities and other implements to run effective static MCH Clinics. The future of the mobile teams then lay in acting as a supervisory/teaching/supply distribution unit for the area, under the aegis of an MCH Co-ordinator, who was usually a nurse/midwife who had attended a training course in MCH administration. It is this group of dedicated personnel who are ultimately the vital link between the Obstetricians and the MCH Aides working in the remote rural areas. Regular seminars and workshops are held for Regional and District MCH Co-ordinators by the MCH Unit of the Ministry of Health, at which the Obstetrician has a duty to communicate the factors currently inflating the maternal and perinatal mortality and morbidity figures and indicate possible areas of improved care which could go some way to reducing such identified problems.

To those with experience of working in developing countries all this may sound just a little too idealistic, bearing in mind that road conditions, the state of repair of vehicles, petrol availability and many other factors will influence the success of such a vertical programme. To this one can only reply that Tanzania has a political infra-structure unparalleled in the developing world, resulting from 20 years of stable administration. The health services are encouraged to use this infra-structure to ensure successful implementation of such programmes.

DISCUSSION

CHAIRMAN: Professor D. Fairweather

Dr. Bullough: The need for isolated midwives to receive continued support was mentioned by Miss Kwast and I am sure that anyone working on their own, be they district medical officer, obstetrician or midwife, unless blessed by unbounded confidence, are very likely to find themselves in great doubts of their own ability. Being limited to their own experience and relying on the written word for fresh information they are very likely to let the standards of their own work slip, despite the best intentions.

But for the midwife, who should carry out this form of support and supervision? Miss Kwast mentioned that the tutor might do it. This is an ideal situation, but in practice in most developing countries it does not happen, and mostly the isolated midwife is supervised either by the matron from the nearby hospital, or the medical superintendent, or the district medical officer. Too often these people are in a position of administrative superiority, and their visits tend to degenerate into questions of whether the cupboards are clean and whether the drug supplies are arriving. Thus, it would be better if it was someone who was not in a position of administrative superiority, someone like a tutor, or perhaps even an obstetrician, who would be more interested in clinical events than in administrative procedures. On the other hand, if the type of in-service training described by Dr. Ross could be organised, then this other qualm of less adequate supervision would be unnecessary.

To train a midwife and to make no arrangements for following her up is rather like buying a car and making no arrangements ever to service it or to have spare parts available. I am sure that the business community would regard our lack of concern for the future of our midwives with absolute horror and perhaps it should be a point for discussion as to whether future programmes for the training of midwives should have built into them from the moment of their inception a programme for in-service training.

The educational qualifications of our midwives is also a matter for discussion. There are good reasons for wishing for high qualifications. Midwives who are able to carry out labour ward procedures are of considerable help to the single-handed district

medical officer. It has been my own experience that the higher the midwife's basic qualifications, the more likely she is to progress and to accept new ideas as time goes on.

For example, when trying to interest midwives in the idea of traditional birth attendants, I found that it was the midwife with the better basic qualifications who accepted the idea whilst the less qualified thought it an idea with no future. On the other hand, we cannot be misled and think that the registered midwife, or the top cadre of trained midwife can run our whole service. In many countries the training of the Class 3 midwife, that is the midwife trained in the vernacular, has been stopped in an effort to raise the standards, and yet as Dr. Evans noted with his MCH aides, and I noticed too with registered midwives and Class 2 midwives, better educated girls are of high social status. They attract as marriage partners men who seek employment in the towns, and therefore they are not willing or able to go to the rural hospitals. I have known of several instances when there have been many unemployed midwives in towns whereas only twenty or thirty miles outside there were maternity units that could not attract enough staff.

Perhaps this would be a good point at which to begin our discussions. Is it better to raise our standards and have unstaffed units, or is it better to lower them to some extent and staff them with vernacular-trained Class 3 midwives?

Dr. Gebbie: One of the biggest problems is getting the midwives, like the doctors, back into the rural areas. If male nurses were to be trained, would a part of this problem be solved?

Miss Kwast: I think that there is a place for male midwives, although there seems to be some mistaken belief that men are not accepted. The medical assistants in East Africa contribute a great deal to obstetric care - and they are men. Resistance is far more likely to come from female midwives than from female patients. If the patients accept the male obstetrician, then why not the male midwife?

Professor Bwibo: It is true that midwives believe - and I think it a wrong belief - that male midwives will not be acceptable, and yet they have been accepted in Kenya by virtually every tribe. Previously the medical assistant's training has been restricted to the clinical approach and excluded midwifery, but this has now been changed and two months of midwifery has been

introduced into the medical assistant's training. The medical assistant or the clinical officer is the person in charge of the health centre and unless he knows the value of midwifery and emergency midwifery he may well refuse the ambulance needed to take a patient to the district hospital because he does not see the necessity to rush that patient to hospital. The new training means that this difficulty can be avoided.

Professor Philpott: The Study Group has not given due recognition to the Clinical Officer who is a male Medical Assistant who has received advanced clinical training, and usually served an 'apprenticeship' with an experienced medical officer in a rural hospital. These Clinical Officers are employed in many of the rural hospitals in Central and East Africa, either to assist medical officers or, in many instances, they function on their own because of the shortage of doctors. Many are very capable and are able to perform major surgery. They do Caesarean sections, but unfortunately they are barred from the labour ward as the midwives have felt that the women might not like men around. I would agree with other speakers in not accepting the validity of this myth. Either we give these Clinical Officers training in clinical obstetrics, or we train Advanced Midwives who can do all the obstetrics in a rural hospital - preferably we should train both and they can then fill the gap between the midwives and the depleted rank of doctors.

In many parts of the developing world there is poor understanding by the doctor, and sometimes the obstetrician, of the role and the work of the midwife. Many doctors, particularly those trained in the developed countries, are not aware of the need to delegate work and it has never entered their thinking that others with lower educational qualifications can take considerable clinical responsibilities if trained and encouraged. Indeed, they will, if they are humble enough, meet many midwives who will be able to teach them the important clinical skills that they did not receive in medical school. There is a great need to orientate obstetricians and doctors to the kind of progressive midwifery care as described by Miss Kwast and others. The midwives need support from the doctor, yet too often they get exactly the opposite.

I would hope that, in addition to a doctor visiting the clinics regularly and maintaining in-service training in the periphery as Dr. Ross described, that even though the sister tutor is busy, in between class intakes, or somehow, there would be

time for her to go around and see what is happening to her product; not only that she can stand alongside them, but that she gets a new understanding of the needs, and therefore adjusts the objectives of her training programme. This is not an idealistic luxury; it is imperative if the training programme is to be dynamic and relevant.

Our major task is to ensure that the midwives trained stay in the rural areas. This must mean that we need to be adaptable in being prepared to accept women from the villages with the best educational standards available (and for some years to come that may be very minimal) and give them the best midwifery training that we can provide that is relevant to their practice and only be limited by their ability to learn. Could we also give attention to means whereby we can improve the quality of life for the rural midwife, so improving her job-satisfaction?

Miss Kwast: We could train a higher calibre midwife but allow her to have lower educational entrance qualifications, so envisaging that as she has lower qualifications she will come from a rural area. But if we do that, if we have midwives of a lower educational standard - as they do in the North of Nigeria where they have problems in that women are barred by traditional beliefs from following an education and yet there is a need to educate them as midwives - then we shall have to make adjustments. We would need to extend the training. Another thought would be to admit women at a higher age, i.e. married women. Would they be able to cope? I think that they would, if they were motivated older women who were selected from the rural areas. We should select women who are economically and by marriage already bound to the rural areas, perhaps older women, in the 30 to 40 age group, and with children. These women would be motivated and they are willing to learn. Otherwise we shall have to leave it to the lower grade midwives.

Among the tribes in Eastern Nigeria, birth attendants have been trained. These are not traditional birth attendants. They are just literate and they are trained in the vernacular. They are chosen from the community, and they are bound to stay there because of marriage.

Dr. Berkeley: I was very interested in Miss Kwast's expansion of the role of the midwife into a multi-purpose health worker. When we tried to do this we found it diluted her role in MCH work.

Miss Kwast: I did not have the time to demonstrate that there are different categories of fully-trained midwife;

- midwives
- nurse midwives
- community midwives
- public health nurses.

It would be unfair to ascribe my expanded role to all of them. However, the higher-calibre midwife, who will eventually become the supervisor-coordinator, has to be familiar with the full range of primary care. The community midwife, or the community nurse midwife will obviously specialise more in one function.

Dr. Barns: I wish to comment on in-service training in contrast to, or as a reinforcement of, basic chores of training carried out in a different location. In evaluating the impact of training programmes in different countries in South East Asia, one ends up with a certain amount of doubt about the lasting impact of the one-shot-in-the-arm course of training where a girl is removed from her environment and possibly ends up by marrying someone in the town. This type of training is very often stereotyped. It includes a good deal of physiology and anatomy, and it is not very often geared to the type of service in the village where the trainee may end up. Moreover, it tends to be transmitted in a paternalistic way.

In-service training on the other hand - I am speaking of the health team - is conducted on a regular fortnightly or monthly basis, which is built in to the timetable of the members of the health team. This provides an opportunity for the health team to meet one another. We speak of the health team, but very often different members living in different villages never see one another, except possibly on pay day. The training also has other advantages. If it can be used as a get-together then the girls, who tend to be rather shy at first, gradually come out as they become familiar with one another and can participate in role play, in presentation of difficult cases that they have seen in the previous month, and so forth. This is a very valuable source of feedback to their trainers. It feeds back the problems that the midwives etc., whom they are training, are encountering.

If a manual is available, and manuals for health workers are being developed in more and more countries, it is always assumed that a girl will read her manual. In fact, it is very

unlikely that when an auxiliary gets home in the evening she will put her feet up and sit down in the armchair and reach for her manual, whereas some regular on-the-job in-service occasion for training will make for an opportunity to transmit the content of the manual to the girls in a training session.

Professor Beard: I recently visited Professor Philpott and what impressed me was the high calibre of midwife that was being trained who was much respected in the community and who was capable of providing midwifery care and of influencing the practice within the community in which she lived. The particular exercise with nutrition, to which Dr. Ross referred, was most remarkable. There, as a result of an initiative taken over by the midwives they were actually changing the diet of the people around them to their general benefit. The people were able to have allotment patches and to do their own planting of new foods, and it was remarkable.

Perhaps Professor Philpott might give a brief description of the new type of midwife that he is starting to train. She in a way might well be answering some of the problems that Dr. Menon posed about providing a service in outlying districts.

Professor Philpott: For the advanced midwifery diploma we are selecting a group of midwives who are already trained and who have had at least two or three years of experience out in the periphery. They are being given a year's training, part of it in the base hospital and part of it out in the peripheral clinics, that will enable them to fulfill the role of the doctor in the base hospital in respect of maternal and child health. To a certain extent they establish their own curriculum conducting a survey of obstetric needs in a community and then they plan the most appropriate way to fulfil these needs. They are given teaching that will enable them to recognise the high-risk patients and then they are guided as they construct their own manuals of practical obstetrics. They cover a full syllabus of clinical obstetrics including all methods of operative vaginal delivery and Caesarean section. Important components of their syllabus are communication and managerial skills.

Dr. Stott: Dr. Ross made a very important point when he showed that the referral rate and the perinatal mortality rate could be reduced in his peripheral clinics. This must be emphasised. So often an increase in referrals to the base hospital produces the feeling of growing dependence of the

primary sector on the secondary sector. Demonstration of this point is obviously supremely important from the point of view of establishing the quality of primary care and also the status of primary care in the peripheral sector.

The other vital point that he made was that he discovered that the higher skills to which he referred were not only technical skills. He found that communication skills, the ability to communicate with patients, was tremendously important if the system was to work. As someone involved in primary care I would urge that this be considered to be one of the most important skills, next to the technical skills that have been so much discussed.

Finally, I am a little worried that when we talk about the team we are talking about primary care in its various forms in the various parts of the world, and yet no front-line workers have been included in our deliberations. All of the Participants in the Study Group are working at a secondary level and no one has been brought here to represent those whom we are discussing, their training and their problems. If any further meetings are convened there should be a strong voice from these people who have been so much talked about.

Professor Trussell: Taking the question of in-service training further, I would agree with the speakers in this Session who have stressed the value of getting away from the formal instructional kind of training and stressing the detailed day-to-day week-by-week component of in-service training. We should be reminded of the value of the antenatal clinic in this respect. Ten minutes could be taken at the end of an ante-natal clinic - granted a rather exhausting clinic - a clinic in which many members of the team have been operating, and could be used to pick out a couple of cases which have been reviewed, to look at them, and to ask whether we have really accomplished during the course of the clinic, for this particular family, what we set out to accomplish. This can be done each week. It does not matter who is there. Even if it is a very small or a very junior team running the clinic at a very simple level, it can still be done. If there is a visiting superintendent or a doctor present the discussion can go on at a slightly higher level.

INTRODUCTION

Dr. P. Dissanayake (Chairman): We now come to the second part of the Session. The proceedings so far have clearly shown the importance of the midwife in the maternal and child-care activities at the periphery. She is the front line and the obstetrician works only at a distance. However, there are large areas where even this "trained bird" is rare - as we have heard - having flown to the city. In this situation the local woman has to take her place. Thus is born the village midwife, or the traditional birth attendant.

It is for the obstetrician to supervise and to guide these trained personnel, and even occasionally visit them and see their work at firsthand. Therefore, he must learn about the training and functions of these people, who are often the only people who will remain in the area carrying on the good work that they have started.

We are fortunate in having three specialists who have personal knowledge to address us on this topic.

VILLAGE MIDWIVES IN THE SUDAN

Dr. S.Y. El Hakim

BACKGROUND INFORMATION ON THE SUDAN

The Sudan is the largest country in Africa with an area of approximately 2.5 million square kilometers. It is generally flat with the great desert in the north, the Savanah in the middle and the tropical forests in the south. The River Nile and its tributaries traverse the country from south to north (1). The climate is tropical. High temperatures are recorded in the north with an average high mean of 43°C. The annual rainfall varies from less than 25mm in the north to 2,000mm in the tropical forests in the south.

In the sparsely populated Sudan with a population scattered in small villages, miles apart, and connected by poor means of communications the problem for health planners becomes very difficult. In many areas the only means of communication is by walking on foot or riding donkeys, cattle or camel. Mechanical transport is rare and mainly used for supervision, inspection and distribution of drugs.

According to the last census in 1973 the population of the Sudan is 14,902,894 with a density of 5.9 persons per kilometer. Approximately 18% of the population reside in urban areas of more than 4,000 persons, 71% are in rural communities and 11% are nomadic. The population growth rate overall is 2.5% but among nomads it is as low as 0.8% (2). Nearly 46% of the population are less than 14 years of age, approximately an equal number are between 14 and 44 years and 8% are over 44 years.

The socio-economic structure of the Sudan ranges in acceptance to scientific knowledge from the extremes of those who live by myths and magic to modern communities who accept all available knowledge. These wide variations of acceptance affect employment, education, financial resources and the family structures of communities. At the time of independence in 1956 the incidence of illiteracy was very high amongst females. 75% of young women between the ages of 25 to 30 years living in Khartoum had not been to school. Since that time educational opportunities for girls have improved, but even up to 1973/74

53% of young women in Khartoum had not been to school.

The Gross Domestic Product (GDP) of $232 in 1974, shows the Sudan to be one of the poorest countries of the world. Over one third of this GDP is generated by agriculture (2).

HISTORICAL DEVELOPMENT OF THE VILLAGE MIDWIFE PROGRAMME

Before the introduction of the village midwife programme in the Sudan the unskilled traditional birth attendants (TBAs), called "Habil midwives", were greatly respected by the simple Sudanese community headed by its administrative leader the "omda". These midwives played an important role over the years, being very close to families under their care and invariably regarded by their children as a second mother. The term "Habil midwife" or "rope midwife" is a descriptive term, named from positioning the patient during the second stage of labour in the squatting position with legs apart and holding a rope hanging from the roof until delivery was complete. The instruments used by the TBAs were the razor blade, a piece of long leather to sharpen the blade and pieces of cloth to cover the wounds of the anterior episiotomy. The delivery was conducted under septic conditions with a high maternal and fetal mortality and morbidity.

There have been three phases in the development of the village midwife programme:

The Opening of the First School in Omdurman

In January 1921 Miss. M. Wolff from the United Kingdom started the first training school. The reasons why she introduced the programme were very clearly stated by her in 1926: "the midwives thus trained become in a minor way missionaries in the homes of people in the cause of cleanliness and simple hygiene, and it is to their growing numbers and increasing influence that we must look not only to establish a standard of simple midwifery hygiene in the home, but also to combat the almost universal custom of complete pharaonic circumcision which is so barbarous in its execution, and which is so fraught with danger both to the mother and the child. It may be many years before the custom is effectually checked, but meanwhile the first seeds of the silent revolution to cleanliness and hygiene are being sown in the homes of people".

The first programme was based on a three month course designed for the unskilled TBAs mainly to teach them techniques of asepsis, conduct of the three stages of labour and care of the newborn. This programme was faced with many difficulties and only through the devotion and strong will of Miss Wolff at that critical period were the obstacles overcome. She had to persuade the unskilled TBAs to join the course as they were reluctant and invariably old, then to convince the mothers to be delivered by graduates of the school and finally to design the first programme to suit the local traditions and conditions.

Four years later Miss G. Wolff came from Fayoume in Egypt to join her sister and help her in the programme. By 1926 there were sufficient trained midwives in Khartoum province to carry out the practice of midwifery efficiently. During that year the course was extended to six months and in 1930 to nine months.

National Recognition for the Programme

Gradually recognition by the people and medical personnel came about and by 1948 national recognition for the programme was declared and schools covered the whole country (3). In 1962 the modern programme for training the village midwives was developed in all schools of training in the Sudan. Theory was taught from a standard textbook, and practice was performed close to maternity hospitals and units with well equipped district midwifery sections. Training was conducted by well trained staff midwives under the supervision of obstetricians. This resulted in a gradual evolution from the TBA to the fully qualified midwife (4,5). The devotion and courage of the Wolff sisters in defying superstition, evil demons and long standing beliefs, their brave work and excellent performance resulted in the birth and survival of midwifery training throughout the Sudan (6).

The additional objective set by Miss M. Wolff was to eradicate the custom of pharaonic circumcision. Her team of trained midwives learnt to substitute the radical pharaonic circumcision by a simple "sunna" circumcision in which only the prepuce of the clitoris is removed and as a result the earlier custom is dying out (7).

Advanced Education for the Village Midwife

As the number of literate midwives increased in the Sudan the

health planners decided to implement advanced education for the responsible and efficient village midwives.

In 1976, El Hakim (8) evaluated the first experiment of training the village midwife to become an assistant health visitor. The success of this training was accepted by the Government of the Sudan and four training centres were planned for the next five years. In 1978 Nelson (9) reported on a teacher training programme in fertility management and MCH care in the Sudan. The village midwife can play a vital role in this programme being very closely and intimately related to the families under her care. The results of this experiment are still being assessed.

THE TRAINING OF THE VILLAGE MIDWIFE (10)

The staff midwife or health visitor is the trainer of the village midwife. This person is very expensive to train and is basically selected from graduates of nine years school education with a pass. They spend three years in a nursing school to qualify as certified nurses and this is followed by two years in the nursing ward. The best are selected for a one year course to qualify as nurse/midwives, followed by two years experience in a maternity unit as a nurse/midwife. Selection to the course of staff midwives or health visitors is based on a competitive examination among the qualified nurse/midwives. The health visitors have an eighteen months course.

The criteria for recruitment of the village midwife are carefully applied. She should not be more than 25 years of age, be a resident of the locality from which she is selected, should be accepted by the people and be serving them, should be selected by the local midwives board which includes an obstetrician. Married applicants and those who are literate are preferred.

Course Content

The course content and learning objectives were specifically designed for the tasks of the village midwife. Her job description would read as follows: "she is a health worker selected by, and paid by, the community, concerned with improving the standards of midwifery at the village level, caring for mothers and children under the technical supervision of a medical assistant at the dispensary" (11). The village midwife is responsible for;

1. delivery of pregnant women in their homes, recognition of complications as they arise and to refer these cases to the nearest higher health institution;
2. provision of antenatal care;
3. teach health improvement by good nutrition, and demonstrate the use of local foods;
4. post-natal care including advice on hygiene, nutrition and breast feeding;
5. cooperation with the community health worker in promotive activities in the community;
6. supervising the health of children up to one year of age, particularly regarding the introduction of protein foods along with breast feeding;
7. participation in the immunisation programme.

The course content therefore includes:

1. Antenatal care

   a. diagnosis of pregnancy and identification of abnormalities;
   b. advice to pregnant women on diet using local foods, showing them how to prepare and preserve these foods;
   c. simple advice as to personal hygiene and importance of rest and sleep;
   d. emphasis of the importance of frequent, regular antenatal visits;
   e. identification of the minor discomforts of pregnancy and provision of simple treatment;
   f. identification of the complications of pregnancy and early referral to a higher centre;
   g. referral of apparently normal pregnant women to a higher health centre for routine check-up and other available services.

2. Delivery

   a. the proper use of instruments, gauze and drugs supplied in the UNICEF box;
   b. proper measures of asepsis and sterilisation;
   c. identification of the onset of labour;
   d. the management of normal labour;
   e. the management of normal delivery;
   f. the management of the third stage of labour;
   g. identification of abnormalities of labour and delivery and appropriate measures for referral to higher centres.

3. Care of the newborn

a. care of the newborn including attention to the cord and respiration;
b. identification of abnormalities of the newborn and appropriate referral to higher centres;
c. assistance to the mother to enable her to breast feed.

4. Post-partum care

a. advice to the mother as to simple measures of hygiene at home;
b. identification of normal changes of involution of the uterus, changes in the abdomen and breasts during the puerperium;
c. management of breast feeding;
d. identification of post-partum complications in mother and baby and proper knowledge of referral of those cases to health centres;
e. advice on diet, prolonged breast feeding and exercise for the mothers;
f. advice on resumption of sexual intercourse, menstruation and possibility of future pregnancies.

5. Infant care

a. identification of circumstances detrimental to infants under one year of age and advice to parents;
b. identification of abnormalities in the progress of infancy and proper referral of such cases;
c. identification of common infectious diseases, disorders of infancy and proper referral;
d. advice on immunisation of infants, periodic examinations, diet and personal hygiene in the first year of life.

6. Family planning

The course content includes no training in family planning except advice to the mother on spacing of pregnancies.

7. Public health care

a. health education with respect to communicable diseases, accident prevention and home sanitation;
b. participation in public health schemes;

c. reporting of births and infant deaths;
d. advice for mothers to stop pharaonic circumcision and conduct of sunna circumcision as an alternative.

Specific Learning Objectives

As the incidence of illiteracy is high, theoretical training represents only 20% of the whole programme. This is conducted in Arabic on a simplified basis of repetition until the lessons are learnt by heart. A standard midwifery textbook in Arabic is used as the basic guide for teaching in all the schools of village midwives. The practical training is in the form of demonstrations in simple Arabic. The practical sessions are conducted on the school premises, antenatal clinics, maternity units and in the district.

On admission to the school the candidates are taught how to look after their own personal hygiene, they are supplied with a uniform and taught how to keep it clean. They are also taught how to keep their beds, wards, bathroom and kitchen clean.

During the first month they are taught how to use scissors, artery forceps, the clinical thermometer, and the removal of sutures. They are shown how to maintain and use the drugs and instruments in the UNICEF box. This box is one of the most valuable tools in the training of the village midwife. It contains various drugs and solutions which the candidates are taught to recognise, even when blindfolded, by the senses of touch, smell and taste. They are taught how to sterilise and keep the delivery instruments clean, prepare sterile dressings, sterilise their hands with soap and brush, prepare the delivery bed with their rubber mackintosh and use the enema and catheter.

Practical training on the model, invariably called after a famous patient they knew, and on the dummy, is also considered very important in the training of the village midwife. Using these models, they are trained to detect abnormalities of pregnancy, the management of normal labour and delivery, the detection of abnormal labour and abnormal delivery. Each candidate should deliver five cases on the model without any mistake before being eligible for district midwifery. They have practical sessions on the model infant in the management of prematurity, methods of nutrition for the newborn and post-natal care for the newborn.

Each candidate should attend 24 complete antenatal sessions and perform 20 normal deliveries in the district, together with over 90% attendance of the theoretical and practical sessions, before being considered eligible to sit for the final examination. Each midwife on passing the qualifying examination is provided with the necessary UNICEF box and granted the Certificate of Village Midwifery. There are 18 Village Midwife Schools in the Sudan, 5,256 midwives have graduated up until the end of 1976 and there were 657 in training in 1977/78.

THE UTILISATION OF THE TRAINED VILLAGE MIDWIFE

The broad area of operation of the Certified Village Midwife is the locality from which she is originally recruited to serve. They provide obstetric care on a domiciliary basis and very rarely constitute the staff of special maternity units. The Village Midwife can refer cases beyond her competence to the dispensary, health centre or hospital, which ever is nearest.

REFERRAL SYSTEM

Antenatal referrals

The Village Midwife holds her antenatal sessions weekly in the Primary Health Care Centre in her locality. She accompanies her antenatal referrals to the nearest dispensary or health centre where the health visitor discusses all the abnormal antenatal cases in the form of a practical demonstration with all the Village Midwives in her district. The health visitor inspects the midwifery boxes every two weeks.

Intranatal referrals

In urban areas close to schools of midwifery training, ambulances with staff midwives are always prepared to answer urgent calls from the Village Midwives in the district. In rural and nomadic areas referral to the medical assistant or health visitor in a higher health centre is carried out by runners who carry a special coin to indicate the request for help. Red coins are used for haemorrhage, green for delay in labour and white for a doubtful diagnosis. As the Village Midwives are invariably illiterate the messages sent by these coins will help the staff working in the higher centre to know the type of emergency and equip the team to carry the necessary help to the patient. If mechanical transport is available at the locality the midwife

should accompany the referred case to the higher centre.

Post-natal referrals

If the patients are mobile they can be referred by mechanical or animal transport. If the patient is immobile the midwife can call for help from a medical assistant or health visitor. She can also refer these cases to the medical assistant who visits the Primary Health Care Centre weekly.

SUPERVISION

The Village Midwife performs her domiciliary practice on the premises of the Primary Health Care Centre. She can always call for help or advice from the medical assistant or health visitor.

The medical assistant is responsible for the continued process of supporting and supervising the Village Midwife, for registration of births, supply of drugs, replacement of instruments in the box and analysis of any complaints made against the Village Midwife by the village leaders. He can deal with minor complaints locally and others may be passed to the executive officer or provincial medical officer of health for further action.

The health visitor is responsible for the technical supervision and continued training of the Village Midwife. The health visitor should visit the Village Midwives periodically, review their work and knowledge and inspect their boxes at least twice yearly. Continued training is conducted through group sessions held in the health centres every other week for all the Village Midwives in the locality.

Each Village Midwife receives ten Sudanese pounds per month from the town or rural council in addition to being well paid by the women she is looking after in her domiciliary practice.

PERFORMANCE OF THE VILLAGE MIDWIFE: STATISTICAL DATA

The available national data are considered meagre and inaccurate. Khartoum province is covered by the best MCH services and has health data available (12,13,14).

The expected number of pregnancies per year in Khartoum province is about 146,000. The total number of antenatal mothers who visited health institutions in 1976 was 79,541, or about 54% of the expected number of pregnant mothers. The total number of mothers referred for further specialised hospital care was 3,618, or approximately 4.5% of all attending mothers. In 1975 the antenatal referrals increased by 50% compared with 1974.

The total number of registered births in Khartoum province was 30,719 in 1976, or 40% of all deliveries. Registration of births is mainly carried out by village midwives and health personnel in midwifery units. Of these registered births 72% were delivered at home by the Village Midwives and 28% were delivered in hospital. In the El Obeid area there were 1,659 deliveries in 1972 with a perinatal mortality rate of 119 per thousand and a maternal mortality rate of 13 per thousand births (15).

During the same period of time there were 8,976 home deliveries with a perinatal mortality rate of 16.7 per thousand and no maternal deaths.

In a survey analysing maternal mortality in the Khartoum area in 1969 Modawi (12) quoted a maternal mortality rate of 1.9 per thousand births. As compared to Bayoumi's report in 1976 of a maternal mortality rate of 23.8 per thousand births in 1955 and 8.3 per thousand births in 1969 (10).

These reports show that the low neonatal mortality and safe conduct of home delivery as one of the basic tasks assigned to the Village Midwife, has been successfully achieved. Her role as a health worker in the Sudan is well established through her efficient performance and her recognition by the whole community.

References

1. Sudan Almanac. An Official Annual Handbook. Compiled by Ministry of Culture and Information last Edition 1970/71.
2. Baghir, O.S. Sudan Profile, Department of Health Statistics., M.OFH 1977: 20-29.
3. El Hakim, S.Y. The first Obstetrical Conference is a landmark in the history of training midwifery personnel.

Paper 1, The Village Midwife. Sudan Medical Assoc. Congress Series No 1 Proc III Congress Obstet Gynaecol Khartoum Apr 1973; p47.

4. Bayoumi, A. The History and Development of Medical Services in the Sudan. Thesis submitted for the degree of Doctor of Medicine University of Khartoum, 1974; p211.

5. World Health Organization. Expert Committee on Midwifery Training, First Report WHO Report Series No 93, Geneva, 1955.

6. Kendall, E.M. A Short History of Training of Midwives in the Sudan, SNR, 1952; 33: 42-52.

7. Modawi, O. The Impact of Social and Economic Changes in Female Circumcision. Sudan Med Assoc Congress Series No 1, Proc III Congress Obstet Gynaecol Khartoum Apr 1973; p242-254.

8. El Hakim, S.Y. Training of Village Midwives. Combined Seminar of Family Planning, Training and Utilisation of Village Midwives (in Arabic) 1st Session. Khartoum Feb 1976; p1-12.

9. Nelson, J.H. End of Assignment Report, Teacher Training Programme in Fertility Management and MCH. Care for the Sudan. Annex V Trainee Roster June 1978.

10. Bayoumi, A. The training and activity of the Village Midwives in the Sudan. Trop Doct 1976; 6: 118-125.

11. Primary Health Care Program, 1977/78, Khartoum May 1976; p17 and 141.

12. Modawi, O. Maternity Services in Khartoum Hospital. Sudan Med Assoc, Congress Series No 1, Proc III Congress Obstet Gynaecol Khartoum Apr 1973; p139.

13. Ibrahim, M.A. Neonatal Problems in Khartoum. Sudanese J Paediatr, 1977; 1: 1-8.

14. Ibrahim, M.A. The Pattern of Paediatric Emergency Admissions in One Unit in Khartoum. Sudanese J Paediatr, 1977; 1: 20.

15. Malik, A. Obstetric Emergencies in El Obeid. Sudan Medical Assoc Congress Series No 1 Proc III Congress Obstet Gynaecol Khartoum Apr 1973; p85-91.

THE TRADITIONAL BIRTH ATTENDANT IN BRAZIL

Professor Galba Araujo

The parteira has traditionally been a major health care provider for millions of rural women in Brazil. Today she continues in her role as a birth attendant and provider of primary maternal-infant rural health care. I am going to describe a unique system of health care delivery based upon the association of the parteiras or traditional birth attendants (TBAs) and a highly technical university based hospital. First, I will describe the traditional mother-child health care delivery system and the role of the TBA in north-eastern Brazil. Next, I will review the contemporary urban-based maternity hospital system of the Federal University of Ceará. Finally, I will discuss how we integrated these two systems in order to provide culturally appropriate health care for rural mothers and their babies.

This paper attempts to characterise the TBA throughout Brazil, since I believe all TBAs in the country are more or less the same. However, it must be remembered that Brazil is a large, culturally diverse area, and to avoid the risk of over generalisation I will restrict my discussion of TBAs to the north-east region where I have had first-hand experience with village-based parteiras.

Setting

The North-east of Brazil lies completely within the Tropical Zone, is composed of nine states and covers an area of one million five hundred thousand square kilometres. It has a growing population of thirty-five million people. It is a region of limited resources and presents unique characteristics. Although there is a narrow green belt along the coast and up into the Amazon Basin, most of the North-east (the interior or backlands) has a dry, arid climate subject to recurring droughts.

Cattle raising is the major backlands occupation, but there is also a limited production of beans, rice, corn and cotton. The people living in the North-east are relatively poor, have large families (many having eight or more children), are of the Catholic faith and know little or nothing about family planning. These people are not always responsive to highly technical and

sophisticated welfare programmes. Docility, submissiveness and credibility mix with an extremely critical attitude toward proposed government projects; this latter resulting directly from unfulfilled promises in the past as well as resistance to change.

Ceará, one of the large states in the North-east, is my home state and it is very representative of the region. It has a population of over five million people. One million, three hundred thousand of these live in the capital city of Fortaleza, and many thousands more live in the immediate rural areas surrounding the city. Many of the urban women and almost all of the rural women are attended at delivery by empiric midwives or TBAs.

Recruitment and Role of the Traditional Birth Attendant

The TBA of north-eastern Brazil is typically a middle-aged person (average age, 47) who had been asked to help a neighbour or friend at time of delivery because no-one else was around. One experience led to another and before she realised it she was a recognised midwife in her community. She may on occasion call in an older more experienced TBA to help with a difficult delivery and thus learn from her colleague. All knowledge she acquires is from her own experience and observation, or, information handed down from her mother or received from her colleagues. Most are illiterate and have almost no formal schooling, but have a keen sense of the practical and the obvious.

Through personal interviews with empiric midwives, many of them on tape, we have learned that the fundamental value of the TBA is that either she is a relative or a well-known friend of the woman in delivery. She comes into the house at the hour of delivery, as an assistant to the mother-to-be. She takes care of the children, makes the meals, cares for the needs of the family, assists at delivery and stays with the new mother for several hours after the birth of the baby. This gives the mother some time to rest before going on about her normal duties of wife, mother and homemaker. It also assures the midwife that there are no complications following delivery. For psychological support she knows that praying helps, for it reduces nervous tension and brings confidence to the patient.

The TBAs recognise a breech presentation and know, too, that these babies are born normally. Most recognise a transverse

presentation and when in doubt they call in an older and more experienced TBA for help. By deduction they can recognise the position of the head and dorsum by finding the side which presents fetal movement, for this side cannot be either the head or the back. Although they have never heard of uterine stimulation "per se", the TBAs know that abdominal massage speeds labour. Her calm and unhurried attitude results in a natural second stage of labour. She does not call on the mother-to-be to "bear down" with every contraction but in her knowledge and experience waits until she knows that the time has come for delivery.

The TBA almost always maintains her patient in a sitting or squatting position during the expulsion period. For this she utilises low benches, three or four-legged stools, etc., lines the floor beneath the stool with clean cloths and, sitting on the floor, awaits the arrival of the baby (see Plate 1). This is not a new idea as we can see from a reference in Exodus, Chapter 1, Verse 16. The TBA generally cuts the cord after delivery of the placenta and this, without her knowing it, permits the baby to receive the supplementary blood held in reserve. The TBA rarely puts medication in the eyes of the newborn. Her experience does not indicate its use. There is very little genital infection in rural areas. The TBA usually recommends breast feeding within 24 to 48 hours after delivery, or leaves the decision up to the mother. It is not the TBA's custom to indicate breast feeding immediately after delivery.

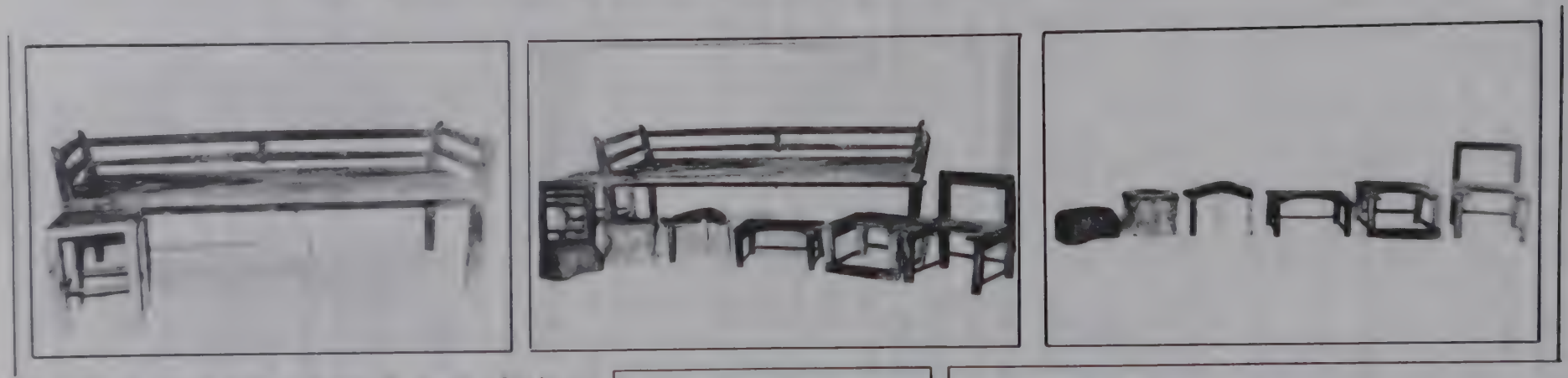
It took us several years to learn to appreciate the work of the TBA and we achieved this appreciation through the maternal-infant health care projects we established and directed in rural areas surrounding the Ceará University Teaching Maternity Hospital.

University-based, Urban Medical System

The Assis Chateaubriand Teaching Maternity Hospital - a component of the Medical Complex of the Federal University of Ceará - has for many years been concerned with the development of a rural health care delivery system for women and their babies. This Teaching Maternity Hospital, hereinafter called the Central Support Hospital or CSH, attends about ten thousand deliveries a year and around thirty thousand women through its out-patient department with pre-natal, postpartum and gynaecological cancer prevention clinics; but the need to reach further, to help the poor, debilitated mother-to-be in the surrounding rural areas which lack formal medical attention, is a constant concern.

PLATE 1

EXAMPLES OF BIRTHSTOOLS FROM MATERNIDADE ESCOLA ASSIS CHATEAUBRIAND; BRAZIL



Leather couch; Wooden stools and chairs; a slab of hardwood and a whale vertebra used by midwives in rural areas.

(Left) The vertical position preferred by midwives and patients for delivery.

The CSH has a permanent medical staff of fifteen medical professors and sixteen residents. Additionally, twenty obstetric/gynaecological specialists are contracted to provide 24 hour, rotating coordination and supervision of all medical activity in the hospital. As a university hospital it is fully equipped with the newest technological hardware and trains 120 medical students every six months, plus student nurses and student social workers. Thus there are plenty of trained personnel to help with a rural project, but how to get it started?

The Integration of TBAs and CSH

The development of a new health care system can be relatively simple if resources are available to provide the plan with skilled professionals, well-equipped hospitals and clinics and financial resources for continued support. However, the mounting of a health care programme in a rural area of a "developing country" with limited resources is a difficult task and one encounters many surprising obstacles. But it can be done and our experience has shown that programmes highly successful in improving maternal-infant health care can be achieved with previously untrained, local personnel and limited resources. Furthermore, they not only influence the health care of the mother and child during and immediately following parturition, but also result in delivery of substantial primary health care services to the entire family.

1. SETTING PROGRAMME GOALS AND OBJECTIVES. What is required to initiate a health delivery system such as this? First, the goals and objectives must be well defined. Our goal at the beginning was to improve the conditions of childbirth and the health of new infants and mothers through optimal utilisation of local resources and personnel. These goals have been broadened subsequently as we have found that the development of a successful programme for health care delivery to pregnant women and newborns has a positive impact on the delivery of primary health care services to the entire community.

Second, one must be aware of the unique cultural characteristics such as local beliefs, behaviour and value systems in the community under development. In addition one needs a clear understanding of the existing indigenous medical system. Such knowledge is essential in developing a programme that will be acceptable to the entire community.

Third, local leaders and parteiras (TBAs) must be selected who have ability, leadership capacity and a genuine willingness to help others through care of new mothers and their babies. The local TBAs require special attention and consideration in order to increase their self-confidence and to encourage their participation. TBAs are invariably insecure with their relative lack of knowledge and experience when working in conjunction with physicians. Furthermore, in many instances, they have been subjected to ridicule and severe criticism from physicians in the past.

Fourth, a support hospital is required to handle the high-risk patients referred from the rural area by the TBA or visiting physician and to provide the faculty and facilities for training the TBAs. As we have mentioned, the Assis Chateaubriand Teaching Maternity Hospital has served as the central support facility.

Fifth, although we began with very limited monetary resources, some financial support is needed to initiate such a programme. Support can be solicited from a variety of local, state, federal and philanthropic organisations. Financial backing for our programmes have been provided by the Federal University of Ceará, the Ceará State Secretary of Health, the Brazilian Welfare Legion, the Ford Foundation and the W.K. Kellogg Foundation. Technical assistance has been provided by the World Health Organization and the Pan-American Health Organization. As the programme began to function effectively, approval by the Brazilian Rural Foundation (FUNRURAL) led to the additional development of reimbursement mechanisms which helped to provide long-term support for continuing operation.

2. PROGRAMME IMPLEMENTATION. After these five basic administrative pre-requisites were met, additional measures were taken to implement our pilot project. We began by selecting a medically underserved community known to have a high maternal mortality rate and limited access to medical care. Guaiúba, a small town about 30 kilometres south of Fortaleza, fitted these criteria.

Meetings with the community were used to publicise the purpose and the objectives of the project. Special efforts were made to include TBAs together with local civic leaders in round-table discussions for the purpose of soliciting their ideas and suggestions.

Twenty TBAs were engaged in additional training at the CSH for a period of two months, after which they returned to their work areas better informed and more secure in their knowledge that medical help was available if needed. Of the initial twenty TBAs, four were chosen to work in a small Obstetric Unit to be set up in a vacant building in the village.

The first evidence of the community's interest in the project was to make this tiny Obstetric Unit functional. After cleaning, repairing and painting the building, which had stood vacant ever since it had been constructed 12 years previously, the women of the community furnished it with small gifts, i.e., a glass, a plate, a spoon, a sheet, etc., while the men made beds and mattresses. The local leaders elected a civic group to maintain and financially administer the Obstetric Unit. Statutes were drawn up, the organisation was legalised, and we were in business.

A team of one doctor and one nurse was sent twice a week from the CSH to do pre-natal care and immunisation at the unit. Additional duties of this team included supervision of the TBAs and the running of the Obstetric Unit. Basic medication such as antibiotics, saline solution, ergotrate and heart stimulants were provided by the CSH. The trained TBAs were encouraged to send their patients in to the Obstetric Unit for pre-natal care and for delivery. The TBA who accompanies her patient into the Obstetric Unit performs the delivery when it is normal and accompanies her patient to the CSH when referral is necessary. No attempt is made to care for the high-risk patient at the Obstetric Unit. All such patients - first diagnosed by the trained TBAs, who use a simplified chart for this purpose, and later confirmed by a visiting physician - are referred to the CSH when time comes for delivery.

The out-lying TBAs are called into the Obstetric Unit once every three months for an interview with the doctor or with the nurse. They discuss the TBA's activities in the field, what problems she may have encountered and how she solved them, etc. She is given additional medical supplies if necessary; a new uniform if the old one is worn and faded; money for transportation and a hot meal. There must be some attraction or they will not come in.

The workability of the Guaiúba Obstetric Unit was tested for one month using only food contributed by the community and

transportation of those high-risk patients referred to the CSH provided by the people themselves.

3. COMMUNITY ACCEPTANCE OF PROGRAMME. In the beginning the patients were fearful and distrustful as were the TBAs. However, this attitude changed as the unit gained respect in the community and utilisation of the facility increased. At this point, FUNRURAL was invited to visit the project and to judge its effectiveness. A direct result of this visit was prompt approval of the project which led to the establishment of financial arrangements for services rendered. This brought money directly into the hands of the civic group which disbursed it among the TBAs working at the unit and paid for utilities. An indirect result was money circulating in the community providing an income before unknown. In addition FUNRURAL offered to supply a mobile unit which could circulate in outlying areas of the county needing medical and dental attention.

The entire community then began to receive both prophylactic and curative medicine in increasing amounts: health lectures, immunisation, and medical-dental attention. Health services were available to all, but care to mothers and children was emphasised. Thus, the project took hold, became better known and eventually began to receive praise from the community itself.

4. PROGRAMME EVALUATION. Several interesting observations have emerged as we have gained experience and have evaluated the operation of the Guaiúba project: (Tables 1,2,3, & 4).

a) the relatively small number of referrals was a surprise, as only 12 to 15% are sent to the CSH for consultation;
b) the frequency of normal deliveries at the Obstetric Unit was very high;
c) fetal distress resulting from prolonged labour was not found;
d) puerperal infection has been absent although sterilisation has been replaced by simple cleanliness and much washing of the hands. The TBA does not perform gynaecological examination. She limits her activities to receiving the child as it is born. This may explain in part the absence of infection. It was surprising for us to learn from an interview with an untrained TBA that, although she had over 1000 deliveries to her credit, she had never seen the genitals of another woman;

TABLE 1

AVERAGE MONTHLY EXPENSES AT AQUIRAZ, GUAIÚBA & LAGOA REDONDA OBSTETRICAL UNITS

4	TBAs	48 hour week	at $65	/month	US$260.00
4	Aux. TBAs	" " "	at $50	/month	200.00
2	Cleaning Women	" " "	at $50	/month	100.00
1	Cook	" " "	at $50	/month	50.00
1	Laundress	" " "	at $50	/month	50.00
	Food				300.00
	Maintenance & repairs				200.00
	Paper and secretarial supplies				40.00
	Total cost per month			-	US$1,200.00

This sum of US$200.00 is covered by money received from the Government Rural Foundation (FUNRURAL) for services rendered.

plus additional US$1,000.00

Salaries for one physician (20 hour week - US$500/month) and for one Nurse (48 hour week - US$500/month) are met through grants received by philantropic foundations.

TOTAL COST PER UNIT PER MONTH ..... US$2,200.00

TABLE 2

TYPES OF DELIVERIES
MATERNAL - INFANT HEALTH CARE PROJECTS
July, 1978 to June, 1979 FORTALEZA, CEARÁ, BRAZIL

Projects	No. of Deliveries	Cephalic Presentations		Breech Presentations		Referrals to Support Hospital		Caesarean Section Among Referrals		% Caesarean Sections for overall No. of Deliveries
		No.	%	No.	%	No.	%	No.	%	
AQUIRAZ	492	407	82.7	8	1.6	77	15.7	9	11.7	1.8
GUAIÚBA	424	348	82.1	9	2.1	67	15.8	11	16.4	2.6
SÃO GONÇALO	216	188	87.0	5	2.3	23	10.7	3	13.0	1.4
LAG. REDONDA	666	600	90.1	5	0.8	61	9.1	9	14.7	1.4
TOTAL	1,798	1,543	85.8	27	1.5	228	12.7	32	14.0	1.8

TABLE 3

REFERRALS FROM PERIPHERAL CLINICS TO SUPPORT HOSPITAL
RURAL MATERNAL - INFANT HEALTH CARE PROJECTS
July, 1978 to June, 1979 FORTALEZA, CEARÁ, BRAZIL

Reasons for Referral	PROJECTS				Total
	AQUIRAZ	GUAIÚBA	LAG. REDONDA	SÃO GONÇALO	
Normal Delivery - Cephalic	33	20	28	07	88
- Breech	04	02	01	01	08
- Forceps	01	01	01	02	05
- Twins	01	-	01	-	02
Caesarean	09	11	09	03	32
D and C	16	18	08	02	44
Manual Curretage	-	04	04	03	11
Post-Partum Haemorrhage	02	-	02	-	04
Post-Partum Eclampsia	01	01	01	-	03
False Labour	01	02	03	-	06
Various/miscellaneous	09	08	03	05	25
TOTAL	77	67	61	23	228

TABLE 4

REASONS FOR CAESAREAN DELIVERY AMONG REFERRALS FROM RURAL M-I PROJECTS

July, 1978 to June, 1979 FORTALEZA, CEARÁ, BRAZIL

Reasons for Caesarean Section	MATERNAL-INFANT PROJECTS				Total
	AQUIRAZ	GUAIÚBA	SÃO GONÇALO	LAG. REDONDA	
Prolapse	1	-	-	1	2
Dystocia	1	-	2	1	4
Lower Segment Distension	2	5	-	3	10
Infection in Labour	2	2	-	1	5
Shoulder Presentation	1	2	-	1	4
Placenta Praevia	1	-	1	1	3
Fetal Distress	1	-	-	-	1
Eclampsia	-	1	-	1	2
Rupture of Uterus	-	1	-	-	1
Total	9	11	3	9	32

e) perineal tears have been infrequent and have been limited to first degree lacerations which rarely need surgical repair. When necessary and in the absence of the doctor or nurse, the trained TBAs can perform simple surgical repair;
f) panic or fright, so commonly seen during normal deliveries at lying-in hospitals, is completely absent. No doubt due to the psychological factor of being surrounded by persons and conditions well known to the patient;
g) there has been an absence of diarrhoeal infection among the new borns in the Obstetric Unit. It seems likely that this is due to the practice of immediate breast feeding thereby diminishing the possibility of contamination from outside sources during infant feeding;
h) the Ceasarean section rate has been slightly less than 4% of the overall number of deliveries attended, whereas the the rate for sections among private patients at the CSH is over 65%;
i) the basic medications placed at the Obstetric Unit were not used and have since been removed completely with the exception of saline solution.

As a result of these observations, the TBAs were given increasing responsibility for simple pre-natal procedures. A high-risk card was created which, once completed, accompanies the patient needing special pre-natal care and delivery at the CSH. Medical visits have been reduced to once a week and now doctors attend high-risk patients only.

The Guaiúba Project has functioned well. We have achieved 100% anti-tetanus immunisation and Pap smears among all of the pre-natal patients. The health lectures began to pay off when the women requested immunisation for all members of their families. The immunisation programme which began with a doctor and a nurse from the CSH has since been turned over to the local auxiliary nurse and the frequency rate has doubled. The programme has been extended to children from 0 to 4 years of age. A rehydration programme has been installed as well with emphasis on oral rehydration done by auxiliary nurses under the supervision of the physician and registered nurse.

The programme of course, is not without its defects. For example, our simplified data gathering techniques and statistical evaluation methods need further refinement. However, as it is, the programme represents a great step forward for those who previously had nothing in the way of organised health care.

5. PROGRAMME EXPANSION. The results of the Guaiúba maternal-infant health care programme were so satisfactory that we decided to duplicate the project in other communities lacking direct medical care. Two examples: Lagoa Redonda and Aquiraz, have produced identical results. And at the request of Fortaleza Port Authorities, we set up a two-bed Obstetric Unit and trained the one existing TBA in the tiny village of Cumbuco, inhabited by fishermen and their families and isolated from the rest of the world by huge sand dunes.

These community Obstetric Units were set up to care for 30 to 35 deliveries per month. Many of the women who come for pre-natal care still have their babies at home with their favourite TBA, either because they prefer home delivery or have transportation problems. The Units in Guaiúba and Lagoa Redonda have long since passed the 1000th mark for normal deliveries and Aquiraz has passed the 900th mark in less than three years. Lagoa Redonda, which is closest to the city of Fortaleza, has become so popular that women who have medical/hospital insurance and could have their babies in any maternity hospital in the city, prefer the Obstetric Unit for there they are among friends.

6. INTRODUCTION OF A NEW LINK: THE PERIPHERAL SUPPORT HOSPITAL. A variation of the original project has been initiated in São Gonçalo, a small town of about 3,000 people, seat of government and business activities for a county of the same name containing 40,000 inhabitants. The small hospital there is now serving as a peripheral support hospital (PSH) to the programme for that community with the Assis Chateaubriand Teaching Maternity Hospital remaining the CSH. An agreement was reached whereby CSH residents and interns would substitute for the São Gonçalo doctor on week-ends and carry out a training programme for local TBAs as well as care for the doctors patients. This system has allowed us to train about 50 TBAs in that county. They are given allowances to facilitate their attendance at five classes and five 24 hour tours-of-duty at the PSH.

The training offered at the Peripheral Support Hospital to the TBAs covers the following material in five class sessions:

1) physiology of pregnancy and delivery in the simplest of terms;
2) immediate care of the newborn, cleansing of air-ways, eyes, etc., using clean cloths only;

3) immediate care of the mother, spontaneous delivery of the placenta, cutting of the umbilical cord, immediate breast feeding;
4) what the TBA is prepared to do, and what she should not do, before, during or after delivery;
5) how to recognise the high-risk patient and what to do with her;

During the five tours-of-duty at the PSH, the TBAs perform deliveries under the supervision of the resident doctor and become familiar with hospital methods and personnel.

Upon completion of the classes and practical training, the TBAs receive a uniform which carries an emblem of the project and a small metal box containing scissors, thread, gauze, cotton, an opthalmic solution for treating newborn eyes, a measuring tape and a Pinard stethoscope. TBAs are not accustomed to using clamps or gloves. When they do use them they have no way of properly caring for such material and this can, especially the gloves, become an agent of infection. The uniform and material give status to the TBAs and they return to their home deliveries with a new spirit and an ability to perform more efficiently, secure in their knowledge of how to recognise and treat the high-risk patient (see Plate 2).

Identical systems have been employed in small coastal towns called Paracuru and Trairi, with results identical to those achieved in São Gonçalo. Today we have four functioning Obstetric Units that refer their high-risk patients to the CSH and three rural hospitals (PSHs) located 60, 90 and 120 kilometers west of Fortaleza that refer those cases they cannot handle to the CSH. All Obstetric Units and PSHs have FUNRURAL ambulances on 24 hour call. Immediate and rapid transportation has contributed greatly to the good results achieved by the programmes.

7. SUCCESSFUL MATERNAL AND CHILD HEALTH PROGRAMMES STIMULATE EXPANSION OF OTHER PRIMARY HEALTH CARE SERVICES. From our experience, once basic care for mothers and their babies has been established, the expansion of other primary health care services follow, for example:

At the request of the Guaiúba civic group we taught sanitation; installed septic tanks; gave lectures on all aspects of health care;

reasons for boiling water; wearing shoes; etc. Slides and movies were used as was a give-away programme of water filters to those homes which had installed their own latrines and septic tanks. The overall goal was to instill basic notions of individual and collective hygiene.

In another programme of short duration we distributed eyeglasses for "tired vision". Donated to the programme by the FUNRURAL and by an American business firm, the glasses of varying magnification, were a huge success. The old people with "tired vision" would try on the various strengths until they found a pair they could use. These oldsters, who could no longer make lace or mend their fishing nets, much less afford perscription glasses, became ecstatic when they discovered they could see again to do delicate hand work. This is an absoultely primitive way of correcting eyesight but it serves as a useful purpose (see Plate 2).

Another direct result of the maternal-infant health care programme was expansion of the immunisation programme, for at the request of the mothers, we extended vaccination services to all members of the community.

Mentioned before in this paper was the establishment of a rehydration centre in Guaiúba. With emphasis on oral rehydration it has been very successful in combating dehydration due to gastro-enteritis among small children.

Conclusion: As we have demonstrated there is a way to establish primary health care programmes in small rural communities at very low cost and to delegate authority for simple health care services to local personnel after proper training. The most important person in the whole project is the high-risk parturient. Once she has been identified, treated and transferred at time of delivery, the medical aspect of her case is guaranteed. Maternal and fetal mortality and morbidity in rural areas are a result of limited technical facilities and environmental conditions.

There are those who may feel that by training TBAs and enabling them to utilise primary health care methods one is devaluating the work done by the physician and/or taking potential patients away from him. Our experience indicates that both claims are unfounded. First, the physician is central in design, implementation and supervision of the project, and secondly, the TBA does not invade the doctor's "patient territory" in rural areas, for these areas are financially incapacitated and cannot support a physician.

In summary, the principle objective of this project has been the maximum utilisation of both the Ceará University Teaching Maternity Hospital, with its trained staff of physicians, nurses and students, with medical laboratory, blood bank, and other technical equipment, and the Traditional Birth Attendant, in order to extend medical coverage to rural communities lacking formal medical welfare systems. To achieve this we have:

1) worked with local leaders to form civic groups responsible for setting up and financially administering community Obstetric Units;
2) set up a maternal-infant health care delivery system utilising doctors, residents, and students from the central support hospital;
3) trained local TBAs that they may offer better care in their home deliveries and when possible utilise the Obstetric Units for their patients;
4) trained the TBAs to recognise the high-risk patient and to send her to the Obstetric Unit for referral to the central support hospital;
5) set up a transportation system which enables the immediate referral of high-risk patients from the Obstetric Units or PSHs to the CSH;
6) trained the TBAs and local leaders to take over simple pre-natal procedures for low-risk patients and immunisation programmes, leaving the physician free to attend the pre-natal care of high-risk patients, supervise the functioning of the Obstetric Units and train the TBAs;
7) adapted the system to small regional hospitals 60, 90 and 120 kilometers from the CSH. We now have 150 trained TBAs working within the area which covers over two thousand square kilometers.

PLATE 2

INFANT AND MATERNAL HEALTH CARE PROJECT

FORTALEZA, CEARÁ, BRAZIL

PERSONS BORN ON BIRTHING STOOL

PERSONS BORN ON WHALE VERTEBRA USED AS BIRTHING STOOL

PERSONS BORN ON HARDWOOD SLAB USED AS BIRTHING STOOL

COMMEMORATING 1000TH NORMAL DELIVERY LAGOA REDONDA OBSTETRICAL UNIT JUNE 26 1978 - NOV 26-1978

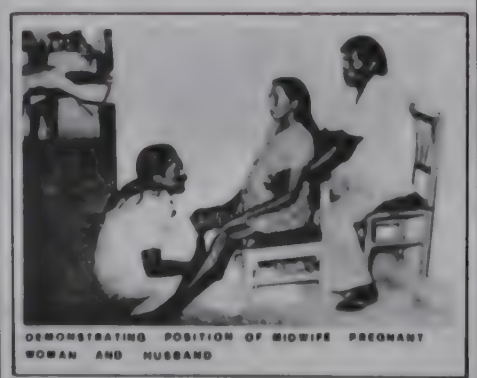
FREE DISTRIBUTION OF GLASSES FOR 'TIRED VISION' FUNFURAL AND PENNSYLVANIA OPTICAL

TBA'S WITH EQUIPMENT RECEIVED AT GRADUATION FROM TRAINING COURSE PARACURU CEARA BRASIL

COMMEMORATING 1000TH NORMAL DELIVERY AT GUAIUBA OBSTETRICAL UNIT - DEC - 10-1978 TO APRIL - 2 1978

MOTHER SEATED ON BIRTHING STOOL WITH 5 OF HER 8 CHILDREN HER HUSBAND AND HER MIDWIFE

DEMONSTRATING POSITION ON BIRTHING STOOL AND POSITION OF HUSBAND



DEMONSTRATING POSITION OF MIDWIFE PREGNANT WOMAN AND HUSBAND

MIDWIFE IN POSITION - PREGNANT WOMAN ON STOOL USING SUSPENDED ROPE FOR SUPPORT

DEMONSTRATING POSITIONS FOR VERTICAL DELIVERY USING STOOL

THE INDIGENOUS MIDWIFE IN INDIA

Dr. T. Barns

Wherever rural populations remain beyond the reach of organised health care the duties of midwife are carried out by unqualified persons who have learnt their skills by delivering babies on their own or by apprenticeship to other traditional birth attendants (TBAs). In different countries they go by different names: she is "Comadrona" in Latin America; "Ambuya" in parts of central Africa (Grandmother), "Hilot" in the Phillipines (Masseuse); in Indonesia "Dukun"; in Malaysia "Bidan Kampong"; "Mohtamyae" in Thailand; in the Maldive Islands "Foolamma"; in Northern India she is known as "Dai", while in the South she is called "barber women".

Except for the island of Bali the TBA is a woman; usually an older woman past middle age, having herself born children, often widowed, having few domestic responsibilities, living within the community among whom she practices.

Her social status and education differs widely from one South East Asian country to another, the Foolamma and Hilot enjoy considerable prestige among their own communities; their potential is recognised and is currently being developed. The Dukun and Bidan make effective contributions to their national family planning programmes. The Dais or Barber Women of India however come from the humblest origins; unlettered, ignorant, engaging mainly as casual labourers in agriculture and other work, they attend when called upon between 4 and 40 deliveries in the course of a year. Neither in India, Pakistan nor Bangladesh have TBAs been successfully integrated into the health care system.

THE DAI'S STATUS AND SOCIAL BACKGROUND

Eighteen percent of India's 700 million population dwells in 2,700 towns and cities, the remainder living in 567,000 villages. Whereas hospital and other health facilities are within reach of town dwellers, the rural populations are served by health professionals based in 5,400 primary health centres sub-tending 40,000 subsidiary centres; each sub-centre responsible for 10,000 population at village level staffed by an auxiliary nurse

midwife (a matriculate who has undergone 18 months formal training).

Although a head count has never been taken, one or more untrained traditional midwives are to be found in every village. Sample surveys suggest, despite increasing availability of government auxiliaries, that 80% of rural births, even today, remain in the hands of untrained attendants.

If a crude birth rate of 35 per thousand is assumed, 80% of which occur in the rural areas, it follows that approximately 15 million rural births in India are currently attended by unqualified persons. Even where deliveries are assisted by relatives or neighbours, the Dai's services are still required for the traditional cutting of the umbilical cord and disposal of the placenta.

Thus, it goes without saying that, co-operation from the Dai is essential to any centrally sponsored Government maternity programme.

In former times each village in India by traditional division of labour functioned as a self sufficient unit. To a certain extent this is true today, division of labour remaining the basis of the occupational caste system, which persists although constitutionally abrogated in 1947.

Among the various ceremonies and customs punctuating birth, life and death, certain castes within the village are allotted specific roles. Thus the Dai belonging to the Harijan or sweeper caste is the only person qualified by tradition to sever the umbilical cord, bury the secundines and dispose of the mothers' and babies' excreta. Not only is the Dai's presence sanctioned by ritual and tradition, but the community may prefer her services to those of the government trained health worker, because as a recognised member of the same social universe she shares in the values and health beliefs of her clients. The government midwife on the other hand comes from a distance, may converse in a different dialect, neither is she prepared to massage, cook, clean, wash linen, nor take part in the post partum 'stepping out' and 'bathing' ceremonies as expected by the women of the household.

Under the village 'jajmani' system of divided labour, permanent obligations, ties and relationships are inherited by certain

families within the community. Thus a Dai may traditionally be required to deliver the children of certain family groups and in this way services to various sections of the community are divided out amongst the Dais resident in a village.

This culturally accepted resident elderly woman, usually shares with her clients an interesting coterie of beliefs and a bewildering undercurrent of age old birth practices, which are an inherited residue from the ancient systems of Obstetrics, Dietetics and Hygiene originally codified in texts such as the Uttarantantra dating from the 5th century (1). Thus, for example, stress on lubricating the birth passages by ingestion or by local application of clarified butter (Ghi) -Pichudharana- confinement in a separate apartment set aside -satikagar-, beliefs relating to tetanus infection -Vahirayamma-, and many others, have been embedded for millenia in the culture of the people.

Failure to take these traditions into account may be a reason for the lack of success which has befallen some of the TBA training schemes in India, and is reflected in anti establishment attitudes towards some of the health services provided by Government.

The degree to which the Dai's independent status, authority and advice are accepted or the extent to which her decisions are over-ruled by women of the household will vary with the character of the family, the Dai and the location. Studies in Bengal (2) have shown up to 38% of births to be assisted by relatives, 14% by neighbours, self delivery in 33% and only 6% effected by Dais. Nevertheless attention to the cord, burial of the secundines and subsequent nursing care of the mother and child are entrusted in all cases to the Dai (3). When conducting perinatal field enquiries to reconstruct events which have culminated in perinatal deaths, one often finds more information can be gained from the mother, grandmother or mother-in-law of the household than from the Dai who attended the case.

Few observations on this important member of Indian society have reached publication (9,10,11,12,13,14,15,16). Moreover the subject has usually been treated from a general or anthropological angle. Only two studies (4,5) have made an appraisal from the strictly clinical obstetric point of view.

The general picture which emerges is of a low caste woman,

35 years of age, widowed (more than 50%), practicing midwifery as a part-time occupation, not as is so often stated as an hereditary occupation, although initially she may have been apprenticed to her grandmother, aunt or relative-in-law.

AN ACCOUNT OF THE DAIS' ACTIVITIES

The Dai is summoned for the first time to her patient by another member of the household between the 2nd and 8th month, pregnancy is diagnosed by abdominal palpation, breast changes or by observation of her client's gait. Recognition of cervical softening on vaginal examination in early pregnancy is occasionally admitted.

The date of delivery is estimated from the Indian calendar on ten forward lunar months. Ante-natal care includes advice, recognition, and local remedies for emesis, oedema, diet, physical work, coitus and abortion.

Importance is attached to abdominal massage with butter or oils to correct or guard against malposition of the fetus or for fatigue. Massage is repeated both during the course of pregnancy and after delivery and may be reinforced by upward pressure exerted by a foot placed beneath the perineum 'to elevate the uterus', or there may be 'pressing' of the patient's back and limbs. For these services the Dai may be rewarded with a handful of grains.

Prematurity and poor neonatal survival due to weak sucking reflexes is attributed to the mother's stumbling or falling during pregnancy, to worry, magic, or to shadow cast on the mother's abdomen by inauspicious persons. Indeed the subsequent attribution of infant malnutrition and marasmus to evil eye or to weighing at birth makes it difficult to collect community research data on birth weights.

Breech, transverse lie, twin pregnancy are diagnosed from time to time by abdominal palpation and certain Dais claim to have performed both internal and external version. Most, however, on account of limited practice, are not competent to deal with mal-presentation nor abnormal labour, although sometimes there are Dais who appear to have undue confidence in their own powers.

A darkened room, having an earthen floor beneath which the

placenta can be buried, is set aside for labour. Lights and shiny objects are removed because it is believed that reflected light may cause tetanus. In northern India patients are delivered in a semi-reclining position on a string cot beneath which heat is generated from a smouldering cowdung fire.

In difficult labours which are attributed to large fetus, male baby or hardness of the pelvic bones, the patient is transferred to the floor where she delivers either leaning against a wall or in a squatting position, her haunches supported on two bricks placed apart. In southern India and in certain other regions women are customarily confined on a floor mat without bedding, so that a physician called to an emergency must be prepared to carry out manoeuvres from a kneeling position. Until brought to bed by the severity of her pains the patient is encouraged to remain standing, and may sometimes give birth in that position supported on either side by a female relative or holding on to rope suspended from the beams.

Once labour is established the Dai is called. The patient will have shaved herself already and is examined vaginally with an unwashed hand anointed with Ghi. This is repeated two or three times during the first stage and during almost every contraction in the latter part of the second stage. Digital examination is made with the index finger only; there is no attempt to separate the labia. The hand is wiped on the bedding. These frequent examinations are mainly carried out to confirm that descent of the presenting part is progressing with each contraction. Presentation, state of the forewaters, and cervical dilatation are also recognised. No account is taken of the fetal condition; there is no auscultation, meconium staining is not recognised (nor could it be detected in the gloom of the delivery room). Fluids are withheld during labour in Southern India resulting in dehydration in cases of prolonged parturition during the hot season. Some Indian obstetricians believe this predisposes to thrombosis of the cerebral cortical veins during the early post-partum period, a condition occurring with frequency in Indian practice.

Two common manoeuvres during the second stage are the use of undue fundal pressure with each contraction to aid expulsion of the fetus, and the practice of 'heeling'. With the patient's thighs separated in a semi-reclining position, her pelvis supported by forward pressure from an assistant who sits on the cot behind her, the Dai seats herself opposite and presses

outwards with the heels of her bare feet against the region of the patient's pubic rami and ischial tuberosities. In this position it seems the patient is prevented from 'with-drawing' during pains when the perineum distends. It might even assist in widening or opening the pelvic outlet as if a variant on the old Walchers position, for much attention is paid in traditional Indian obstetrics to the state of hardening or softening of the pelvic bones as it is in animal husbandry in the west. Although the rationale of 'heeling' remains obscure, most patients derive comfort from the procedure.

Much 'ironing' of the perineum with Ghi accompanies distention of the perineum as the presenting part descends, and it is usual to place the convex surface of a cow dung 'patty' wrapped in a cloth beneath the posterior perineum of the squatting patient at this stage to assist forward passage of the vertex as it distends the perineum. Following this the Dai seemingly becomes an uninterested spectator during the actual birth of the head and trunk, which is accomplished without her assistance. Severing the umbilical cord, the Dai's most central duty, is deferred until after the placenta is out. In her preoccupation with effecting speedy completion of the third stage the Dai ignores the condition of the newly delivered baby. All her efforts are directed to exerting pressure on the fundus to prevent the fatal outcome she rightly perceives if the uterus is allowed to 'Rise up to the patient's heart". The Dai's aim is to bring about the rapid delivery of the placenta wherein resides the baby's first breath. Indeed her remedy in the event of neonatal asphyxia will be to roast the attached placenta on a hot grilling iron, by which she believes she is able to initiate respiration: hence her anxiety to hasten its delivery. Once the placenta is out the cord is ligated with a twist of cotton, and cut with the implement of the father's trade (sickle, leather worker's knife, stone, or scissors in the case of a tailor). The cut is made against the cowdung coated floor. This practice, as much as the treatment of the cord stump with ash taken from the cowdung fire, appears to be a likely source of tetanus spores.

Perineal lacerations are ignored; the baby is bathed; its mouth and eyes cleansed with warm water; Kohl (an Antimony preparation said to possess antiseptic as well as cosmetic properties) applied round the eyes; and a black spot to the centre of the forehead to avert evil eye. The Dai then leaves the patient with fire, water, grain and a piece of iron beneath

her bed for further ritual protection.

Throughout the post-partum period the Dai continues daily oil massage to the mother's abdomen and spiced concoctions to drink to assist expulsion of the lochia; heeling and exerting upward pressure against the perineum to ensure return of the uterus to a normal position; removal of excreta, washing of dirty linen, assisting at the 'stepping out' ceremony on the fifth day, and with the ceremonial bath, hair and nipple washing and cleansing of the room with fresh mud and cowdung on the eighth day. This latter ceremony is believed by some (6) to celebrate the baby's survival of the first week when neonatal tetanus infections are most lethal; the local name in some regions being Athran or 'eighth day' disease.

For the above services the Dai is rewarded with a gift of a new sari, and a new rupee is often placed for her in the baby's bath if it happens to be a boy.

Breast milk is withheld during the first two or three days during which the babe is nourished with spoon or wick fed goat's or cow's milk (eight percent of perinatal deaths during a survey in the Punjab were attributed to aspiration of spoon feeds, especially among premature infants)(5ii). In India and the Middle East colostrum is widely believed to possess poisonous properties.

EVALUATING THE OUTCOME OF THE TBA's SERVICES

As 80% of rural confinements are attended by untrained persons it is hardly surprising that the majority of hospital obstetric emergencies occur among clients of the Dai. The Narangwal perinatal study 1972 (5ii) revealed differential perinatal mortalities of 96:1000 among Dai assisted patients, compared with 47:1000 among those delivered by trained personnel. The chief causes of perinatal death in Narangwal were -

prematurity	-	44%
traumatic breech delivery	-	11%
intrauterine asphyxia (often following the use of pituitrin by indigenous practitioners during labour)	-	8%
aspirated feeds	-	8%

In 74% it was believed that increased birth risks could have been foreseen in these cases, had adequate ante-natal care been available. Similarly in 1964 Gordon et al (4iii) investigating the same area of the Punjab, compared perinatal mortalities of 56:1000 following delivery by trained attendants, with 83:1000 among Dais' cases. Widely differing performance was found between individual Dais whose perinatal mortality rates ranged from 40:1000 to 168:1000 births attended. The incidence of neo-natal tetanus was higher following delivery by Dais when a sickle was used to cut the cord, compared with knife, scissors or razor blade. An earlier study (6) of neonatal tetanus at the Lady Hardinge Medical College in Delhi, traced 93.5% of tetanus deaths to delivery by untrained Dais; the Dai delivery rate in the city of Delhi probably being less than 50%.

DAI TRAINING PROGRAMME

Most TBAs in India remain unregistered, unlicenced, without training, certification or defined areas of responsibility. Their status is comparable to the 'mother Gamp' in British Obstetrics, the first 12,000 of whom were awarded licences to practice in 1902, the year in which a training programme was established, taking another 45 years before the last untrained midwife ceased to practice (7).

The eventual inclusion of the Dai in the health team is indispensable to Indian Obstetrics, where large sectors of the population remain beyond the reach of meaningful services. A Dai training programme was therefore sponsored by the government in 1951 assisted with funds and equipment from UNICEF and United States Agency for International Development. This programme although falling short of its targets has performed as follows (8)

	No. of Dais completed training	Target
2nd five year plan:	15,000	35,000 Dais
3rd five year plan:	12,000	20,000 Dais
4th five year plan:	16,500	40,000 Dais

During the current five year plan period the even more ambitious target has been set of training one Dai in each of India's 567,000 villages by 1982/83. The thirty-day training period consists of two days each week spent in the Primary health

centre or sub-centre; on the remaining days the Dai accompanies the government nurse midwife on her home visiting and other duties. After completing the course the trainee undergoes an oral test, receives a certificate and a midwifery kit.

The shortfall in programme performance has been attributed to:

1) Refusal or reluctance of the Dai to alter cultural habits for fear of offending the deep rooted social relationship between herself and her clients: her preference for doing things in her own way and that of the community to which she belongs (7).

2) Resistance on the part of the community to utilise health services, whose attitudes contrast strongly with those of the husband's family and solicitous relatives present at home delivery; beliefs which may conflict with modern maternity care.

3) Following her training, especially if she has received a stipend, the Dai comes to be regarded as part of the government machinery so the community may cease to remunerate her in kind as before.

4) Nobody has been responsible for replenishing the drugs, soap and other supplies carried in the Dai's delivery kit.

5) Insufficient education of the Dai as distinct from her training, and insufficient education of the community to an awareness of their high mortality rates, might increase acceptance of Government trained Dais' activities.

6) Failure on the part of trainers to recognise the importance of folk practices and traditions associated with childbirth, especially customs seen to be harmless or even beneficial, which might if incorporated into officially taught routines, lead to wider acceptance of Government services.

RESEARCH

Despite her key position in Indian Obstetrics little is known even now of the Dai's knowledge, attitudes and practice beyond what has been described above. With the exception of two field studies (4,5) carried out under Khanna and Narangwal projects, the clinical aspect of her work has not been evaluated. Both of these studies relate to conditions in the Punjab, India's most developed state, so that the wide regional variations remain unrecorded.

The Narangwal study which specifically investigated the obstetric aspect of the Dai's activities, was interrupted and remains incomplete. Its findings are to be found in mimeograph in the John Hopkins annual report to the Indian Council of Medical Research 1971/72 (5iii).

Any training scheme for integrating the Dai into Government programmes for primary health care, needs to be soundly based on prior knowledge of the body of her beliefs and attitudes and critical appraisal of the outcomes of her present activities.

In depth studies of field samples from various regions in India are urgently needed to establish definitive information on this subject. In the first instance a glossary of local terms used to describe birth events could be compiled from this information to provide an essential basis on which the training communication medium can be built up. It is necessary to understand the value systems and beliefs which underlie the Dai's interpretation of these events, and an inventory is needed which classifies her various practices according to whether they are harmful, beneficial or of neutral value to her patients. As many as possible of these should subsequently be preserved and incorporated into government taught routines in order to improve their acceptance by the community. A field enquiry of this kind should be guided by an obstetrician with community knowledge, backed by an anthropologist, and a nurse with Public Health background.

Information should be collected by means of interview procedures and by investigators living on site, so they may be summoned to observe the Dai at her work. A constraint in using prepared interview schedules and proformas is that they lead to stereotyped responses : open ended interviews are preferable and if recorded on tape may later be translated, retaining local terms and idioms and classified under different headings by using scissors and paste. A well conducted enquiry along these lines, with competent obstetric evaluation would be a valuable addition to the Government's Dai training programme.

References

1. Nair, S.P. A Glimpse of the Science of Obstetrics and Gynaecology in Indian Medicine. Indian Practitioner 1966; 19: 235-289.

2. Croley, H.T.; Haider, S.Z.; Begum, S. and Gustafson, H.C. Characteristics & Utilization of Midwives in East Pakistan. Demography 1966; 3: 578-581.

3. Prasad, B.G.; Rao, A.R. and Nayer, S.B. Study of Beliefs & Customs in a Lucknow Village. Indian Soc Work; 1969 30: 45-54.

4. The Khanna Project Reports

   (i) Gordon, J.E.; Gideon, H. and Wyon, J.B. Midwifery practices in rural Punjab, India. Obstet Gynecol 1965; 93: 734-742.

   (ii) Gordon, J.E.; Gideon, H. and Wyon, J.B. A field Study of illnesses during Pregnancy. Indian Pediatr 1965; 2: 330-335.

   (iii) Gordon, J.E.; Gideon, H. and Wyon, J.B. Childbirth in Rural Punjab, India. Med Sci 1964; 247: 344-362.

   (iv) Gideon, H. A Baby is Born in Punjab. American Anthropologist 1962; 64: 1220-1234.

5. The Narangwal Project Reports

   (i) The Narangwal Population study. John Hopkins University rural health research centre - Punjab, India. End of Project Report, 1975; p14.

   (ii) Barns, T.E.C. Perinatal death survey. Narangwal project annual report to Indian Council of Medical Research, 1971-1972; p167-173.

   (iii) Dai study. Nayer, S.; Barns, T.E.C. and Singh, R.D. Narangwal project annual report to Indian Council of Medical Research, 1971-1972; p152-156.

   (iv) Kakar, D.N. Role of the indigenous midwife in Family Planning programme. Nurs India 1973; 63: 14-26.

6. Rao, A.R. Tetanus in a Rural Setting. Indian Child Health 1963; 12: 700-708.

7. Verderese, M. de and Turnbull, L.M. The Traditional Birth Attendant in Maternal & Child Health & Family Planning. World Health Organisation, Geneva. Offset publication No 18.

8. Grewal, S. Govt of India: Commissioner of Family Planning. Personal communication June, 1979.

9. Arora, P. Dai centre experiment. Nurs India 1976; 67: 289-292.

10. Dwiveds, K.M. and Rao, P.H. The training of Traditional Birth Attendants. Int J Health Educ 1971; 14: 29-33.

11. Gardezi, H.M. and Inayatullah, A. The Dai Study. Research monograph of the West Pakistan family planning association, 1969.

12. Majeed, Khan A. The Dai Study. Family Planning Association of Pakistan, 1969.

13. The preliminary report on the study of utilization of Mohtamyae in family planning programme. Ed. Keovichit, S.; Nomsiri, C. 1974.

14. Proceedings of an international seminar on the Role of traditional birth attendants in Family Planning. Eds. Peng, J.Y.; Keovichit, S. and Macintyre, R. International Research & Development Centre, Ottawa, Canada 1974.

15. Rogers, E.M. and Soloman, D.S. Traditional midwives and family planning in Asia. Stud Fam Plann 1975; 6: 126-132.

16. Brey, Kathleen, M. The Dai Training Programme : a background memorandum. Unpublished paper for U.S.A. Agency for International Development. New Delhi, India, 1970.

DISCUSSION

CHAIRMAN: Dr. P. Dissanayake

Dr. Dissanayake: We have had a number of vivid pictures of the traditional birth attendant (TBA) who is - in reality - responsible for delivering 80% of the babies born in these parts of the world. Her greatest value training is of considerable importance.

Miss Kwast: Have any of the three speakers trained any male TBAs?

In the rural area of Eastern Nigeria where I work, I have been able to establish some links with TBAs and a great number of them are male. However, I did not notice any males on any of the speaker's slides. Do they not exist, or are they untrainable?

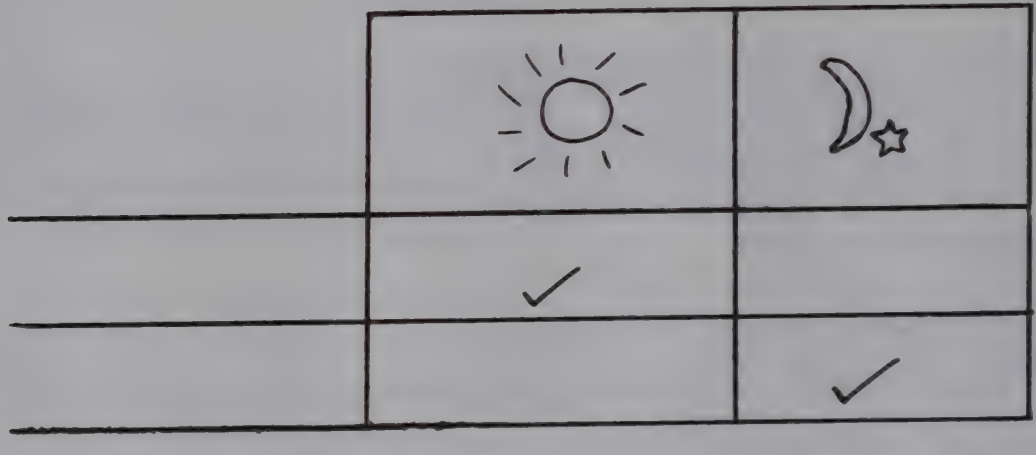
Professor Galba Araujo: They do exist, but if I was to insist on bringing a male into a community he might not be accepted.

Dr. Barns: The only country in Asia to have a male TBA is the Island of Bali. They are not acceptable in Indian society where even male obstetricians are not particularly popular.

Dr. El Hakim: Miss Kwast has raised a very interesting point. There are no male village midwives but we do train male medical assistants. They get ten theoretical lectures and they attend five normal deliveries during their course of training. Their work is directly related to the work of the village midwife, and sometimes the medical assistant may be the only medical person available to help with a delivery. However, the attendance of a male at a normal delivery in a rural area would not be acceptable to the mass of the population, other than in an emergency when there was nobody else available to help.

Dr. Bullough: All three speakers have been rather modest in what they have claimed for their programmes. None of them claimed that it is the best to be done in their areas whereas I think that it probably is. I would suggest that the training of the TBA is probably the best way of reducing maternal mortality at the moment.

In Malawi we established a maternal death survey and found the commonest avoidable factor to be delay at home - and how can we hope to deal with that without training TBAs? I should add that there are many people who are interested in training TBAs, but they are frustrated by lack of time, or cash, or lack of government support. In Malawi we gave illiterate TBAs a training course lasting two weeks in which we mainly stressed the need for the referral of high-risk cases and of patients with prolonged labour. The TBAs were taught to refer any woman who had been in labour over a period including one whole day or one whole night. This was emphasised by having columns depicting this on the single record chart that they maintained



which resulted in referral somewhere between 12 and 24 hours from the onset of labour. Fifteen trained TBAs were followed closely over a period of nine months and only 22 perinatal deaths were recorded from 1,289 deliveries over that period, nearly all of them without the ability of the TBA to prevent. In that nine months, 59 of their patients were referred to hospital. This service was achieved at negligible cost compared with the costs of standard maternity services. It is thus potentially possible to have a beneficial effect on a large proportion of home deliveries which may otherwise be quite beyond our control.

However, it may not actually be necessary to train the TBAs and simply recognising them may do a lot of good. We ran a seminar in Malawi on primary health care and two TBAs gave a very vocal speech in which they declared that in the past they had believed that they were working illegally, that they went in great fear of being put into prison if ever they were caught and that they would hold on to patients in labour for days and days rather than send them to a hospital. But now that they knew

they were recognised they were much happier. They felt perfectly free to send a patient to hospital.

Professor Caldeyro-Barcia: One very important aspect in the training of the TBA is to retain and not to change what they are already doing well. For example, most of them will manage labour with the woman moving freely in the first stage and sitting or standing in the second stage, or perhaps squatting. Yet all the manuals I have seen for the training of TBAs teach that the woman should be in the supine position, or the lithotomy position, which is a big mistake. Such teaching makes for a rejection of the midwife when she comes back to her own community and attempts to force the women to use unnatural positions. There are many other examples of how good practices have been altered in an attempt to introduce Western medicine, with all its iatrogenesis and its mistakes.

Dr. Dunn: I wanted to say exactly the same thing, and I wanted to add some comments to Professor Galba Araujo's report. Although he gave the flavour of what he has been producing in the areas in Ceará, he failed to pass on information about the tremendous success that this organisation has had and the pride, the palpable pride, of the community and the TBAs in their achievement. There were no maternal deaths in some four thousand deliveries and serious maternal infection is unknown except for infections already established before they come into the unit. Very few of the TBAs write, but there is always someone around who will update the book at sometime during the day and they have kept books of everything that happens. I went through the book for between 500 and 1,000 deliveries and the perinatal mortality, with birthweights going down to 400gms, was 15 per thousand, and that was from 85 percent of the population births. 15 percent were referred to hospital but their perinatal mortality is not included in the 15 per thousand.

What struck me as being important was the TBAs very short initial training in hospital, the continuous support with further training, giving them the uniform and the badge which gave them added status in their own community and the tremendous mobilisation in the community. I remember seeing in one of the units a plackard at the doorway saying "This unit has been created by the community for the community" and I really got the feeling that the whole community was in and behind this. The Professor also failed to point out that the cost per delivery in his organisation is $5. Compare that with $3,000 in the United States and

perhaps £200 - £300 in the United Kingdom. The inexpensiveness of it is so vital because there is no money, and of that $5 per delivery 50 percent went to the salary of the doctor and nurse who visited each unit.

Every woman having antenatal care and visiting these units is expected to spend at least one full day working in the unit during her pregnancy, during which she does the cleaning and any other little chores around the unit. This not only provides a free labour force and serves as a token contribution from the patient, but she gets to know the unit, she gets to know the people in it, and she gains confidence and is then happy to come back for the delivery.

Professor Beard: Who are the medical assistants, and what do they do?

Dr. El Hakim: The medical assistants are a category of health personnel who have sucessfully completed nine years of schooling. They then join the nursing school of the Ministry of Health and receive three years of training to become nurses. After that they are asked to attend a two-year course in the nursing wards to achieve and attain the practical aspects of nursing. The cream of these nurses are then selected to be what we call general medical assistants. There are six schools for medical assistants in the Sudan and each turns out between 40 and 60 graduates per year. Some three thousand medical assistants are now practising in the Sudan and this category of personnel do learn the principles of medicine and of surgery with a limited amount of obstetrics - there are ten lectures on obstetrics and they must attend five cases. They also learn a little about ophthalmology. The personnel serve in dispensaries. The primary health care unit is the front line and each group of five health care units relate to a dispensary which will be manned by a medical assistant. These medical assistants who oversee the five units have additional tasks beyond treatment, diagnosis and referral. They have the additional job of overseeing the duties of the primary health care worker, training the primary health care worker, and providing administrative support to the village midwife at that primary health care centre.

Dr. Belmont Williams: May we have some information on the supervision of the TBA and on how her work is evaluated?

Dr. Barns: Dr. El Hakim, with his more highly evolved system

in the Sudan, would be better able to answer this. The Dai in India is theoretically under the supervision of the auxiliary nurse midwife but the system in the Sudan is more highly evolved.

Dr. El Hakim: Our supervision is basically supportive and it is of two types: administrative supervision and technical supervision. Administrative supervision comes from a higher level in the service, that is from the dispensary or the medical assistant. He has to supervise records of stillbirths, normal deliveries carried out by the midwife, abortions and records of any deliveries not attended by the trained village midwife. We consider criminal abortions, and even normal labours attended by the unskilled or the untrained midwife, to be criminal. Such cases have to be supervised and recorded, and since the midwives are likely to be illiterate all these cases have to be recorded and supervised by the medical assistant. As well as this he has to look into her box every week and replenish her drugs, and to see whether she has adapted to the people. He has also to enforce certain penalties if she fails to cope with her work properly; certain minor punishments such as reprimands.

The technical side is run at an even higher level by the health visitors, that is the category of health personnel who teach the village midwife. She is taught either by a staff midwife or by a health visitor; the two grades are equivalent. Those who work in health centres are health visitors and those who work in schools are staff midwives. Education has to be continuous because the midwife is taught by repetition. The health visitor visits every two weeks, training is continued, and she oversees the midwife's cases.

Professor Hendrickse: One has seen, in various parts of the world, systems built up using cadres of people trained to real needs and without all the professionalism, and then more "modern" methods of treatment start to be injected into that system, and the immediate effect of that is to corrode the status and everything else of a system that has been established. I saw this in Ethiopia. The new medical school created enormous problems for the health officers who had been trained at Gondar, many of whom, at a late age, opted to try to go back to medical school and to become doctors.

Dr. Barns: All the speakers to the Session and many of the discussants have emphasised the need to adapt, and to study the traditions, practices and needs of the community. These are

the expectations of the community. Dr. El Hakim spoke of adapting training to the special needs of the TBA and Professor Galba Araujo spoke of not trying to change but to improve. Professor Caldeyro-Barcia said exactly the same thing. This predicates research into the beliefs and practices of the community related to childbirth. It is a very sensitive area, and until one knows what the community believes, what practices they expect, then one cannot attempt to sort out and to classify what should be preserved in the training and practices of the community and the traditional birth attendants.

CHAPTER 8

NATIONAL POLICIES

DEVELOPMENT OF HEALTH EDUCATION PROGRAMMES

Dr. N. Scotney

To reach a satisfactory level in the developing world maternal and neonatal care services need to be improved, developed and extended far more widely. To this process what can health education contribute? So far it has contributed very little. I would like to propose some reasons for this, then to suggest why health education, though of a somewhat different kind, can make a distinctive contribution. Lastly, I would like to consider possibilities of closer collaboration between those involved in maternal and neonatal services and those in health education.

For several centuries conscientious physicians have been engaged in health education with patients before attention was focused upon this as a distinct activity. The change came with awareness of the need to influence the health thinking of people in groups and communities and, secondly, with the opportunity to do this through the use both of formal education and the mass media. Health education, then, came into prominence with the rise of public health campaigns and preventive programmes. Today, health education is frequently still considered to be primarily a service of public relations and public information. But although these services should be part of the activities of a Health Education Department, their limitations, especially in the developing world, are apparent.

As a discipline, health education focuses upon improving health understanding and health behaviour throughout a society, using all available means. Health education, then, is concerned with improving communication not only between health staff and public but in all health related fields including communities and groups, and also within the family. Development of the discipline was very slow and uncertain until methods originating in the application of the behavioural sciences - especially sociology and anthropology, psychology and educational theory - began to be utilised. In its relations to services, health education has a two-way reference aiming, firstly to increase public awareness and cooperation and, secondly, to interpret the health needs, beliefs, values and relevant living patterns of people to medical and health staffs, and administrators.

The essential objective of health education is change of behaviour; that, for instance, people should distinguish symptoms, perceive health hazards, understand their health needs and also the necessary clinical procedures, and react sooner and more appropriately to symptoms. But also that health staff and administrators should appreciate which of those components of their programmes are inappropriate or unacceptable to the community and why. Health staff should then think and talk less of "defaulters" and more of "patients we have lost"; place less emphasis upon failures of cooperation and more upon gaps in understanding and in relationships. Staff should be ready to modify their programmes, methods and routines until these do, in fact, serve the people.

In industrialised countries of the developed world the major concern in health education has been to influence the behaviour of patients and public. Cooperation between health staff and public when they are of the same culture and similar educational level, and so easily able to communicate, has not brought insuperable problems except when, for instance, clinical procedures or cost effectiveness constraints disturb people and limit their cooperation. With minorities and people of sub-cultures, or non-indigenous cultures, however, the problems are both serious and deep rooted.

In the developing world much of the slow extension of programmes can be attributed to their cultural inappropriateness, embodying, as they do, values, procedures and relationships emanating from industrialised societies. People in traditional societies, for instance, fear to die or to give birth whilst separated from family members upon whom they depend. They want not only to be buried in a place acceptable to the family, with which the family can identify; they want the placenta, which linked the new-born to the life giving blood of his mother, also to be buried with due recognition. They want to maintain and to participate in the traditional customs - the seclusion of mother and infant, the rites and ceremonies, washing, purifying and massaging, the gifts, greetings and celebrations - connected with birth that lift and help to unite the group. They do not want the impersonality and the often incomprehensible routines of an alien and "cold" culture to erode the network of relationships that is their life. They do not easily accept a service which originates in a different culture, especially when the people administering and providing it have been trained in

thought patterns and behaviours that are alien to them and where these people are of a different origin and do not use their local language.

Some women make one or two attendances at ante-natal clinics but with no intention of asking for the services of a trained midwife at delivery except in dire emergency. They still fear witchcraft more than disproportion! Increasingly they bring their infants into clinics for immunisations - belief in the magic needle spreads universally - but most of the opportunities provided by what may seem casual ante-natal attendances, are being lost. Why do they - especially the younger ones - make these ante-natal attendances but deliver, as is customary, at home? Mainly, it seems, they seek reassurance. They want to talk, to understand, to learn something. They are "placing their bets both ways" hoping that their fears will be reduced. Usually, however, they go home feeling they have benefitted little from their journey.

Those who benefit from maternity services are usually the friends of the midwife and women of about equivalent education. They tend to live nearby, so regular attendance does not strain them even when coming to term. Midwives who are trained using books from Gower Street, tend to see their jobs as largely technical - the checking of blood pressure, urine, fetal heart, etc. They feel no need to understand local traditional ways of life, or, worse, fear and reject these ways as "dirty", partly because they have managed - at high educational cost - to reach another level. The little time available - or allocated - in clinics is not appropriately used; language problems are acute; there is lack of sympathy and of conviction. Effective communication is rarely possible.

When all else has failed, when a dire emergency does occur, when harsh methods and the use of potions and tampons with traditional abortifacients have failed, when a woman's life is in jeopardy from ruptured uterus or severe post-partum haemorrhage, then sometimes she is brought to the clinic. Many more babies, of course, and many mothers die at home.

Missionaries and committed health workers who work continuously in an area, visit people in their homes, use the local language, simplify their programmes and adapt them to local conditions - even though this is mainly to reduce costs - and also know and respect local beliefs and traditions, often make remarkable

progress. Confidence in them grows. More people are prepared to make those changes in their thinking and living patterns which are necessary to receive and benefit from their services.

In national programmes one purpose - though rarely stated - is to unite the nation and to enlist support for the central government. Staff, however, also have personal goals. They are frequently posted and transferred with little reference to local cultures. The least experienced staff are sometimes posted to remote areas. There is difficulty in translating into the local language the terms used in training. Often a "lingua franca" is used instead of the local language. Community nurse training programmes are expanding but, still, few people are visited in their homes; staff try to increase the attendance at central health facilities. But distance and fear of isolation aggravate the problem. Poor roads, frequently cut by floods, lack of telephones, dangers of wild animals and other hazards, reduce contact both of staff with colleagues and of people with services. So, mothers deliver at home without trained assistance. The exceptional commitment made by missionaries and a few individuals cannot be expected from staff as a whole.

Health education has, so far, made little contribution. Health education staff have, until recently, been recruited from, and so shared the same viewpoints as, health services staff. Their efforts have, accordingly, been directed to explaining existing services to people, not to interpreting the needs of people and their communities to administrators and health staffs. Health education specialists and advisers have, with W.H.O. assistance, usually been trained in countries of the developed world, which training has frequently led to an over-estimation of the potential contribution of the mass media. But increasingly health education, as a discipline, is being based upon behavioural science foundations and utilises social scientists. With the impact of postgraduate training programmes, firstly in India, and now in Malaysia and Nigeria, the balance is changing. The behavioural scientist in health education is beginning to present to those responsible for the provision of services, the community, its needs and values, more clearly and with more confidence.

At the same time reconsideration of methods of providing services and of the burden of needs is leading to policy changes. News of developments in China has encouraged rethinking. The demand

of the Chinese communes that some of their members be specifically trained to meet the commune's recurring health problems, has led to more than the era of the barefoot doctor; it has also directed attention to the massive unmet needs, including obstetric needs, of local communities and to a reconsideration of the position and potential contribution of the traditional midwife, now called by W.H.O. the "traditional birth attendant".

Ugandan official thought was, I found in 1971, that there were no traditional birth attendants. Yet in one village area of Busaga, whilst working on a health education course, we found an association of such women, including a consultant "expert", five "qualified" midwives, also apprentices, and a vague but accepted schedule both of services provided and of payments expected. In Burma I found that an attempt had been made to register traditional midwives and then, by preventing others from getting on to the register, to gradually eliminate this group, but I also found that this scheme was being abandoned. In 1975 the W.H.O. Expert Committee on Maternal and Child Health (1) made reference to "Primary Health Care Workers" whose recruitment and selection it said, "must be made by the community", but no reference was made to traditional birth attendants. In the same year W.H.O.'s Nursing Section promoted studies leading to the publication in 1979 of "Traditional Birth Attendants. A Field Guide to their Training, Evaluation and Articulation with Health Services" (2). A dramatic policy change of this kind towards services that take into account the beliefs, values and practices of rural communities, represents a substantial leap forward. The development of positive and beneficial working relationships with traditional birth attendants may, however, not prove easy. In Malaysia, which has an outstanding service of trained midwives, relations with the "kampung bidans" have been and are being built, but not without difficulty (3).

The W.H.O. group responsible for the substantial and systematic 1979 report, as well as proposing training for traditional birth attendants, emphasises the need for surveys and investigations of the practices and customs observed by traditional birth attendants. The group does not minimise the problems involved but still did not discuss the beliefs and value systems that underly customs. Admittedly this is a difficult assignment. There is much diversity of belief systems but unless the customs and concepts of people living partly in traditional ways are appreciated,

work with traditional birth attendants is likely to be frustrating and unproductive or to be defeated by subterfuges. Traditional birth attendants in many countries have reasons, based upon recent history, for reluctance to collaborate with western-trained health staff. Programmes to involve them need a foundation of knowledge not only of their practices and relations with their communities but of the beliefs, values and concepts that support and justify these customs and relationships.

Traditional customs have often been rejected because they are not understood. One such custom concerns food taboos for the pregnant woman. I have recently collected information about customs and beliefs concerning the pregnant woman, childbirth and infant rearing in South Sudan, where the African Medical and Research Foundation is preparing teachers and establishing schools for Community Health Workers. I found that in one tribe, the Kreish Boro, the pregnant woman is only allowed to take bitter and unpalatable foods. Restrictions on taking protein rich foods are common. This suggests that an important factor in traditional food restrictions for the pregnant woman has been fear of disproportion. The difficult pelvic shape of Buganda women is well known to obstetricians, and also that there was a tradition of practice - though it must have been accompanied by high mortality - of Caesarean section. In any society the distress of prolonged, unrelieved labour is deeply disturbing. Perhaps some of the dietary restrictions for the pregnant woman can be understood as reflecting these fears.

If, then, we are much concerned about newborn babies that are "small for dates" and emphasise improved feeding in pregnancy, we may be battling against firmly held traditions which are backed by sincere convictions. How can we hope to succeed in improving pregnancy diets until efficient obstetric services are brought to the villages? If a tradition emphasises - even during pregnancy - the life of the mother as more important than the life of the unborn infant, we should not be surprised!

Behavioural studies are urgently needed to help us to work more closely with social traditions. Witchcraft practices including the evil eye, cursing and casting spells, are much more feared today than health workers realise. Firstly, some categories of sickness which it is assumed Western medicine cannot cure, including some conditions associated with pregnancy, and, for example, neonatal tetanus, are seldom presented. Secondly,

people in the developing world have been conditioned to believe that westerners, and western-trained personnel, reject and even object to talk of witchcraft or personal forces. Fears of witchcraft may be uppermost in a person's mind, but unless relations with that person are exceptionally friendly and open, these fears will not be mentioned.

Witchcraft, and other beliefs in personalised forces, reflect the overwhelming importance of relationships of trust in small-scale societies. They also point to the numerous disturbing phenomena which, in those societies, are not understood. Pregnancy and childbirth are times of acute anxiety. The frightening symptoms of neonatal tetanus, with no apparent connection with umbilicus or cord, inevitably provoke reference to malevolent forces. To establish a logical connection between tetanus and cord hygiene is difficult. In this and numerous other instances, if our prestige and "source credibility" is not adequate to subdue people's doubts, then, to make progress, careful health education based upon secure relationships is essential.

The success in this endeavour of some missionaries and committed health workers has been mentioned. Services can make headway if personnel will participate by patiently seeking information about beliefs and practices in the villages, obtaining the respect and acknowledgement of those responsible, and learning the strengths of their traditional practices, and building upon these. But people of other societies must not be required - even temporarily - to adopt a way of life which, by its strangeness, induces fears and is fundamentally unacceptable. We have to question the thinking that suggests that our methods and life styles are inherently and inevitably superior and should be the aspiration of everyone.

In Turkana - the dry area of north-west Kenya - we find that the Turkana people who live by herding camels, donkeys, goats and sheep, greet us asking "What is the news from Kenya?" Secondly, although they are magnificent basket weavers they are proud not of that but of being Turkana, of living as closely as they do to the land and of their culture and way of life. Of all the wealth that our Landrovers and aeroplanes display before them, we find that they most value a gift of tobacco. Working with such people brings added respect for human nature, but also an opportunity to appreciate how many of our practices are based upon assumptions. In Burma, and elsewhere, I have found traditional midwives frequently do not cut the cord immediately

the child is born but try to give a last blood feed from the placenta, and, in addition, they do not smack the newborn so that it cries but insert pepper into its nostrils so that it sneezes. They vigorously defend this practice. In the societies in which I have worked I have found that recumbent positions at delivery are not favoured. Sitting or squatting positions are far more widespread. Massage of the abdomen after delivery is usual. In the Philippines it is justified as leading to the explusion of bad blood. Philippine health staff feel that at an early post-partum stage this may increase post-partum haemorrhage (4). Much remains to be learnt from the study of traditional customs and their supporting beliefs.

It has sometimes been suggested that customs can be sorted into three categories, those that are harmful and must be discouraged, those that are neither harmful nor helpful, which should be disregarded, and those that are helpful and should be encouraged. This "cultural surgery" ignores the belief systems and social needs that are the basis of customs and traditions. For instance, a possible reason for secluding the mother and her new baby until some days have passed and the time has come for "outdooring" and a naming ceremony, has been the large numbers of neonatal deaths. As it was expressed to me in Ghana "we have to be sure that the child is destined to remain with us". A custom from our viewpoint, strange, inconvenient or even harmful, may have a social and historical significance which, if understood, we would appreciate. No custom is meaningless but the meaning may be hard to unravel. The explanation given may only cover the fact that the original justification has been forgotten.

Progress in both health education and the development of services is likely to continue to be slow until dialogue develops between those responsible for services and health education specialists, concerning behaviours and needs. Substantial changes in services may be needed. Far too little attention has, for instance, been paid to problems of infertility. The seriousness of this as a social problem in the developing world would be hard to over-estimate. Infertile women are rejected. In western equatorial Africa it is well known that there is a belt - mostly in forested zones - of infertility. In the areas concerned of Cameroon, Gabon, Zaire, etc. this problem has caused much concern. In many countries, both of Africa and other continents, infertility and subfertility reach levels which by any social criteria, are serious (5). There is reason to believe that relatively low-cost procedures including insufflation, antibiotics and marital counselling, can much reduce the problem (6). Because insufficient attention has been given to infertility the credibility of family planning workers

Substantial health education inputs have been made in family planning programmes, but the concept has been promoted with far too little study of current beliefs and values. In francophone Africa "Le planning familiale" was found to be an expression that is counterproductive, giving rise to active opposition. In anglophone Africa emphasis is now being given to "birth spacing". So little success has been achieved in Africa in family planning that the need for a different approach has now been agreed. Kenya may, at present, have one of the highest population growth rates in the world, with less than 2 per cent of Kenyan women in the fertile age range practising family planning (7). However, they have now adopted a population policy for which they have received very substantial funding and other countries can, as their economies improve, be expected to follow. Family planning is, perhaps, the outstanding example of the introduction of a culturally alien programme into societies where its implicit values and its practices do not fit. The mistake made was compounded when, in Africa, the traditional and effective birth spacing customs were ignored.

Health education is increasingly utilising behaviour studies as a basis for behaviour change programmes. Encouragement for this development is urgently needed. Whilst health education is forced into subsidiary roles and used to support programmes that are socially inappropriate it can accomplish little.

The current attempts to build bridges between health staff and communities through "primary health care" and enlisting co-operation of traditional birth attendants may represent a new opportunity for health education to make an impact, or even to be involved and to assist in programmes that lead to effective communication and fruitful collaboration between people and services.

In obstetric and neonatal services we can then hope to see more personal and helpful antenatal and postpartum services including more discussion with and training of mothers. There may also be "waiting houses" for mothers approaching term but living at a distance from health institutions. These will offer exceptional opportunities for the education of mothers in child rearing, nutrition, and, perhaps family planning. Let us hope, too, that there will be more home visiting. Both staff and families can benefit from such mutual learning experiences. I hope we shall also see more midwives stationed in villages to provide a domiciliary service with, as in Malaysia, a blackboard at the

midwife's house to announce the home at which the midwife is working. Hopefully, too, midwifery will include more advice on infant care, with attention to nutrition of both mother and child, to exercise regimes, and home improvement. Lastly, we can, no doubt, expect to see growing collaboration between traditional birth attendants and midwives so that women can receive skilled maternity assistance without abandoning traditions and customs that help to strengthen crucial social and family ties.

How can systematic health education assist the development of nationwide obstetric and neonatal services? So far I have emphasised the study of customs and their supporting belief systems. This emphasis would be justified if it is true that had customs been studied earlier this would have led to the conclusion that they were not going to disappear but had to be reckoned with. Then more rapid progress would have been made in the development of services. If it is now accepted that services must, so far as is feasible, be planned to be compatible with local traditions, then far more needs to be known of these beliefs and customs.

The task ahead is too great for the present handful of health education workers. Their numbers must be increased. Health staff must also be encouraged and trained to assist. In South Sudan experienced medical assistants have been recruited as the teaching staff of the new Community Health Worker Schools. They are well informed concerning the health related customs of their own tribes. They have helped others, including myself, to know some of these customs. I, in return, have tried to help them to understand the historical and cultural bases and social meaning of some of these traditions, and how to work with people whose beliefs we may not share.

Existing staff need additional training. New entrants to the service need to receive a different orientation to the objectives of the service. Training in interviewing and eliciting information and in understanding cultures, building vocabularies and working with people of different cultures are all essential and need to be included in training programmes. The W.H.O. report (2) proposes methods of survey to be used as an initial step in working with traditional birth attendants. Staff should take part in these and other surveys and help to build relationships with the community, so that the community may, in discussion, influence programmes, and be involved in their organisation.

This approach has, of course, been much discussed under the heading of "Primary Health Care". Innovative programmes make such demands upon staff that effective training may be the crucial activity.

Participation in training by behavioural sciences/health education staff may prove to be critical in the development of programmes. This participation in training should, though, begin with involvement in pre-programme studies and in the planning of programmes. The supervision and support of programmes involving dispersed groups can present particular problems. So can programme evaluation. The essential touch-stone is effective communication, leading to the establishment of cooperative relations. To monitor progress in these activities is not easy. A lot of time may elapse before it is apparent that results are not being obtained. Damage will then have occurred and, as in family planning, attitudinal barriers have been erected. The next stages can then be especially difficult.

If a system of feed-back and interim evaluation can be built into programmes without imposing unrealistic burdens upon staff, this may - by permitting rapid intervention - minimise damage. Since the programme developments discussed are all to be built upon closer relations with communities, the insights of health behaviour specialists would seem to be of first importance.

A new era of mutually beneficial collaboration between health education staff and those engaged in maternal health services may be dawning. For health education workers, who have rarely been given such an opportunity to show their capabilities, this collaboration will be very valuable.

References

1. World Health Organization. New Trends in the Delivery of Maternal and Child Health Services. W.H.O. Technical Report Series No. 600, 1976.

2. World Health Organization. Traditional Birth Attendants. W.H.O. Offset Pulication No. 18, 1979.

3. Chen, P.C.Y. Incorporating the Traditional Birth Attendant into the Health Team : The Malaysian example. Trop Geogr Med 1977 29.

4. Bailon, S.G. et al. Midwife (Hilot) Training Manual. Comprehensive Community Health Program - University of Philippines, 1970

5. World Health Organization. The Epidemiology of Infertility. W.H.O. Technical Report Series No. 582, 1975.

6. Eraj, Y.A. Infertility in Women (Unpublished observations).

7. Enge, M. The Situation of Children in Kenya. Stockholm SIDA, 1979.

THE INFLUENCE OF GOVERNMENT POLICIES ON MATERNAL CHILD HEALTH AND FAMILY PLANNING PROGRAMMES IN SINGAPORE

Professor S.S. Ratnam

Introduction

Singapore is a small city state, a republic within the Commonwealth, of 616.3 sq km and a population of 2,334,400 persons, giving an average population density of 3,788 persons per kilometre - one of the world's most densely populated countries. It is situated at the southern tip of Peninsula Malaya and is at the cross-roads of traffic between Europe and Africa in the north-west, and, South East Asia and Oceania in the east and south. It is an urban society built by immigrants, mainly of Chinese origin, who came in the colonial days and stayed on through independence to become Singapore citizens.

In 1819 Sir Stamford Raffles landed in Singapore which then had a total population of 120 Malays and 30 Chinese. Subsequently the population increased mainly by an influx of immigrants. The migrant population was largely composed of males. In 1932 the Alien Ordinance imposed a monthly quota but on males only, and between 1935 and 1939, 190,000 female Chinese migrants came to settle here. This helped to equalise the sex ratio and formed the potential for the post war "baby boom". From 1947 to 1950 the annual population increase was 4.3% whilst the crude birth rate was 42.7 per thousand, giving a general fertility rate of 216.9. From 1957 to 1962 the population had increased by a further 3.6%. The stringent immigration laws had prevented massive population movement and since 1960 the main factor contributing to population growth in Singapore has been a natural increase, representing excess births over deaths.

Family planning was unknown in Singapore until a small group of far-sighted and public spirited individuals started the Singapore Family Planning Association in July 1949, a voluntary organisation. By 1959 the Association had four clinics of its own and also offered family planning advice and supplies at the 27 maternal and child health clinics of the Ministry of Health. The Association received financial support from the Government to carry out its activities.

By 1963 the demand for family planning services had exceeded the capacity of a voluntary organisation and the Association requested the Government to take over the principle responsibility for family planning activities in the country. In response, the Singapore Family Planning and Population Board, a statutory board within the government was inaugurated on 12th January 1966. With the formation of the Board and with the declaration of a definite population policy by the government the family planning activities in the country were intensified. The Board at present conducts more than 50 clinics distributed throughout the island and has made their services available to the people close to their homes. The Board has also intensified its educational programme using all available media and personal face to face motivation at government hospitals and at maternal child health clinics.

Soon after the Second World War, the Kandang Kerbau Hospital was made the only maternity hospital in the island. It continued to serve the entire country as the only publicly supported institution for the care of the mother and the newborn until 1968. It was then reported to be the largest maternity hospital in the world dealing with about 40,000 deliveries a year. The maternal and child health clinics of the Ministry of Health worked closely with the Kandang Kerbau Hospital. The 27 maternal and child health clinics which subsequently increased to 48 were linked to the hospital through the domiciliary delivery service and the domiciliary after-care service. The hospital introduced an early postnatal discharge programme in the early 1950s. The patients were given the choice of having their babies at home with the assistance of a domiciliary midwife or to have the babies in hospital and be discharged within the first 48 hours if the delivery was uncomplicated. The mothers were sent home either with the domiciliary midwife by the hospital ambulance or were given a slip that she could hand over to the domiciliary midwife at the maternal child health clinic closest to her home. By statute it was mandatory for the domiciliary midwife to visit the mother and child every day until the baby's cord dropped.

The midwives working at the maternal child health services were governed by the Midwives Board, a statutory board in the Ministry of Health. In the earlier years many of the home deliveries were undertaken by traditional midwives, presently termed traditional birth attendants, and these midwives were supervised by nursing sisters and staff nurses trained in midwifery and posted to the maternal child health services. The traditional midwives were brought back to the hospital periodically for training

and the training of formal midwives was increased. There were two categories of midwives that were trained, a midwife who underwent two years of training and a nurse midwife who had three years of formal training in general nursing followed by one year's training in midwifery. All traditional midwives who practiced in the country had to be registered with the Midwives Board and no new untrained midwives were allowed to register. Over the next twenty years the breed of traditional midwives disappeared and today all midwives practising in the country are either trained midwives or trained nursing midwives.

The public midwifery service in the country is the responsibility of the Ministry of Health and is directed by the Deputy Director of Medical Services (Preventive) now called the Deputy Director of Medical Services (Primary Health Care). The Professor of Obstetrics and Gynaecology of the University of Singapore was the Chairman of the Midwives Board.

With the establishment of the National Family Planning and Population Board and a declared policy by the government, family planning services were integrated into the maternal child health service in the country.

The First Five Year Plan

In its first five year plan, 1966 to 1970, the National Family Planning and Population Board directed its emphasis to the provision of family planning services to 60% of all married women within the reproductive age range of 15 to 44 years. At the end of this period 156,556 women or 62% of married women between the ages of 15 to 40 had been recruited as new family planning acceptors at the government clinics. There was also a sharp decline in the crude birth rate from 28.3 per thousand to 22.1 per thousand. From 1966 to 1970 the rate of natural increase dropped from 2.3 to 1.7.

The goal for the second five year plan from 1971 to 1975 was to reduce the crude birth rate further from 22.1 per thousand in 1970 to 18 per thousand by 1975 and the rate of natural increase to 1.3%. To achieve this the Board had to recruit 16,000 new family planning acceptors per year from 1971 to 1975, making a total of 80,000 new acceptors. It had also to retain, through sustained motivation and reassurance, the 156,556 acceptors already registered in the programme. The Board also felt that it had to promote male and female sterilisation in those who had completed their family size to achieve its target.

As part of its policy the Board accelerated its education information and motivation programmes to create an awareness of family planning and its benefit amongst youth, those of marriageable age and the newly weds. As an incentive the Board also offered cancer screening free of charge to all family planning acceptors.

Between 1971 and 1975, 89,501 new acceptors registered with the government clinics, which exceeded the five-year target of 80,000 by 11.9%. During this period 37,413 women and 15,099 men underwent sterilisation.

To achieve its desired growth rate and to achieve a zero population growth in the shortest time (by 2050) the government also liberalised the abortion laws in the country. The abortion law was introduced in 1970 and was further liberalised in 1975. During the period 1971 to 1975, 32,513 legalised abortions were reported to the National Family Planning and Population Board. The government also introduced the Sterilisation Bill in 1970 and actively promoted the two-child family, irrespective of the sex through intensive and extensive education and publicity. In 1975 the government introduced incentives and discentives to encourage the two-child family norm (Appendix A).

With these measures Singapore experienced a dramatic decline in fertility of about 10.8 per year from 1972 to 1975 during which time the fertility of 3.1 children per woman was reduced to 2.1 in 1975, when replacement fertility was achieved. The live births in 1975 totalled 39,948 giving a crude birth rate of 17.8 live births per thousand population. The natural increase in 1975 was 1.3% and if the projected replacement level is maintained from 1975 onwards it will result in a zero population growth in around 2030 when Singapore's population of 2.5 million in 1975 will have grown and stabilised at approximately 3.5 million.

The third five-year plan from 1976 to 1980 will concentrate in maintaining fertility at the present level. However, the crude birth rate declined to 16.6 live births per thousand population in 1977 with a crude death rate of 5.2 deaths per thousand, giving a rate of natural increase for 1977 of 1.14%. Fertility fell below replacement level with a net reproductive rate of 4.863 in 1977.

Policy projections show that if replacement fertility is maintained, the number of births would continue to increase to about 50 to 55 thousand before it stabilises at around 50,000 from 1985 to

1990 onwards. This is due to a large number of women continuing to enter the reproductive age range until 1985 to 1990.

The government recognises that a steep increase in the number of births will exert an enormous pressure on its limited resources and in the provision of basic necessities such as, housing, education, medical facilities and public utilities.

With a slower increase in the number of births the resources could be channelled towards economic and social development programmes and an improvement in the quality of life to the people.

Conclusion

Singapore is referred to as a success story in population planning and an example of how a government can effectively tackle the difficult issues that arise from rapidly changing demographic characteristics and the conflict that exists between the natural changes and the traditional values on one hand, and the goals of national development on the other. In Singapore, population problems are much more serious, with an island with no natural resources and a population density of 3,788 persons per kilometre. The government has acted boldly and imaginatively in devising policies and programmes to regulate fertility and alter the population structure to meet the country's projected requirements. Being in the cross-roads of world traffic and having changed from an entrepot trading community to a highly industrialised and sophisticated urban society, the Government had made the necessary projections and implemented programmes towards an overall development. Population policies must, therefore, be considered as part and parcel of the government's programmes for national development and not in isolation. A recent United Nations population profile on Singapore summarised the social economic factors relevant to fertility: all the necessary factors on acceptance of a small family size by the bulk of the population are present in Singapore. The island is a nation contained in a city. Its industrial progress has been rapid based on existing technological skills. The gross national product is high, the literacy rate is high, the average age of marriage is high. There is increasing recognition of the status of a family, especially since a third of the women work. There is progress in legislation in relation to family and population planning. Infant mortality is low and the standard of health services is high. There is, moreover, a strong urge to consolidate ones material position and then to move onwards and upwards.

Many countries in the developing world have gained experience with their own population problems and have implemented new approaches appropriate to local context and have declared population policies with a view to achieving zero population growth in the future. However, there are only a few countries with strong governments and a society that is disciplined and willing to accept national goals as its priority. The Republic of China (Taiwan) and South Korea are countries that have achieved their targets to some extent whilst Singapore has reached a fertility of below replacement level and would reach zero population growth by the year 2030.

There are a number of reasons for the success of the Singapore programme. Singapore has had a democratically elected government since 1959. At present the government enjoys a 100% representation in parliament and was re-elected in full force in the last three general elections. The leadership has remained the same since the government came into power. Whilst the system is democratic and the population has the option of choosing its representatives every five years, once the government has been elected it has collectively decided on what is best for its people. The government is fully aware of the lack of natural resources and the need to change with social and economic conditions that occur in the region and the rest of the world. The government is respected for its integrity and this has been its main strength in getting the population to accept its firm policies even if they appear at times to interfere with traditional and cultural values and personal liberties.

Singapore inherited an efficient and honest administrative service from the colonial days. The administrative service is independent of the political party in power and the selection to responsible position is made by an independent Public Services Commission. Senior administrative officers are given the responsibility and they are expected to implement set goals and targets. The government closely monitors its programmes throughout the period that it is in power and rapidly effects changes when necessary.

Singapore is privileged in inheriting a health service that could meet the needs of the population. The Ministry of Health has considered maternal child health and fertility regulation as its priority areas. In 1976 when the abortion and sterilisation laws were introduced, priority was given to fertility regulation and maternal child health. Physicians were instructed to give priority to termination of pregnancies and sterilisation over cold gynaecological surgery.

The range of choice in population policies is rather narrow and Berelson summarised five measures through which demographic events could be influenced.

1. Spread of Information and Education: Efforts to persuade people to the desired position through information, communication and education.
2. Extension of Voluntary Programmes: Provision of service enabling or facilitating the desired behaviour.
3. Changes in Social Institutions: Shifts in basic supporting institutions in the desired direction.
4. Manipulation of Incentives/Discentives: Provisions of benefits (positive incentives) and liabilities (negative incentives) designed to channel behaviour in desired ways.
5. Imposition of coercion: Requirement of desired behaviour through state power.

The Government of Singapore has used all five approaches to achieve these desired objectives. The National Family Planning and Population Board has implemented effective mass media campaign as well as group and face to face motivation programmes directed towards the adoption of the two-child family norm. In co-operation with the Ministry of Education it has introduced population education in the school curriculum. Facilities for the provision of family planning services including abortion and sterilisation were made readily accessible through the maternal child health clinics distributed throughout the island and through the government hospitals. Within hospitals priority was given to family planning, abortion and sterilisation over cold gynaecological surgical procedures. Social changes were introduced by encouraging female employment, influencing the age of marriage and more recently, to space children. Incentives and discentives have been used extensively and coercion is used in immigration policies in relation to non-Singaporean work permit holders.

The success of Singapore's policy could be summarised in having an honest government, elected by the people and respected for successfully implementing its programmes and improving the overall quality of life of its people. Economically and socially the country has progressed and the gross national product is today one of the highest in the world. Every child is provided with free schooling and health services are available to everyone. The government has provided the population with modern high-rise flats and the umemployment rate is about 3%. The crude death rate is 5.2% and the life expectancy has continued to increase over the past 10 years. The infant mortality rate is only 12.6%.

Family Planning and Maternal Child Health Services are an integral part of the health services. The advantages of a small family and spacing of children for the health and overall well-being of the mother, child and family is emphasised at schools and the Ministry's health education programmes. The importance of limiting the population growth for continuing socio-economic gains has been emphasised through every available media and in less than 10 years, the attitude and values of the people has changed. Today the young, educated Singapore-born Singaporean has fully accepted the two-child family norm and the preference for a male child is rapidly declining.

APPENDIX A

Social Policies

1. Increased delivery charges in government hospitals with each additional child as follows:-

	Class A	Class B	Class C
First	300	120	60
Second	360	180	90
Third	420	240	120
Fourth	480	300	240
Subsequent	480	360	300

2. No paid maternity leave for third and subsequent children.
3. No income tax relief for fourth or subsequent children born after 1st August 1973.
4. No priority for large families in H.D.B. flat allocation.
5. H.D.B. flats - families with 3 or fewer children may sublet rooms.
6. Choice of primary school - lower priority for children of fourth birth order and above unless one parent has been sterilised.
7. Generous medical leave for post-partum or post-abortum patients who are sterilised.
8. Waiver of delivery fees for 'B' and 'C' class patients if sterilised post-partum. Ward charges for 'C' class may also be waived.
9. Government servants will be granted 7 days unrecorded full pay leave for sterilisation.
10. After 2 or more children women attending government Antenatal Clinics will pay $10.00 at every session. These will be offset against delivery fees.

HOW CAN HEALTH SERVICES BE MADE MORE RELEVANT TO THE NEEDS OF MOTHERS AND CHILDREN?

Dr. K. Edström

A lot has already been said on this subject, which is the actual theme of this working group, and I can only try to summarize what are the most important issues from W.H.O.'s point of view, and to add some examples from our programmes on attempts to provide solutions.

At the World Conference on Primary Health Care in Alma Ata 1978, the slogan was adopted, which is also the target for the whole programme of the World Health Organization: "Health for all by the year 2000". More than one-third of those who will form the population of the world in that crucial year, and whom the member countries are promising this state of health, has not yet been born. And during the remaining 20 years many will be born without reaching there. This fact might better than any other arguments, underline the tremendous challenge facing those who are working to improve the health of mothers and children in the developing world. This year the World Health Assembly, our governing body, has adopted a resolution urging its member states to promote the development of primary health care programmes with concrete plans for a comprehensive Maternal and Child Health care programme as its essential component.

Listening to what has been said in this meeting, and looking around in the world on the health status of mothers and children, one soon realises that we are far from the goal of "Health for all by the year 2000", and particularly so in the developing world. This is closely related to developmental factors such as agriculture, education, unequal distribution of resources, lack of clean water, housing, etc., which this meeting will not have much chance to influence. But also if we look at the delivery of health services there are a large number of problems in the developing world that can and must be tackled.

PROBLEMS IN THE DELIVERY OF HEALTH SERVICES

Lack of "Coverage" of Services

The problem perhaps most often brought up is the lack of "coverage" of services, particularly in the rural areas, or

perhaps better the absence of access to services for large parts of the population. The situation usually seen is that the urban areas are relatively well equipped with hospitals, doctors and Maternal and Child Health centres, but the further out in the periphery one moves, the more conspicuous is the absence of health workers. This is often coupled with a lack of true political and budgetary commitment on the side of authorities and administrators, but also with a lack of social commitment on the side of doctors and nurses, not only to serve in rural areas, but also to accept that these services be delivered by someone else less trained (that is, trained for a shorter period of time, but not necessarily less well trained for the tasks assigned to them).

Under-utilization of Services

This is a problem that is grossly neglected both by service planners and by the service staff themselves, although it is closely related to the next one, namely, the lack of appropriateness of the services provided. We have heard how they are all too often not based on the actual needs of the community to be served and not adapted to the available resources. Often they are also made unnecessarily demanding in terms of complexity and thereby again limiting the availability to well equipped settings only. It is of course evident that the introduction of sophisticated fetal monitoring systems would be totally inappropriate and would consume a large proportion of the available resources in a setting where most women cannot even deliver in hospitals, but it might be less often considered that the requirement of, for instance, a cancer screening test in all women before prescribing the pill in a family planning clinic will seriously restrict the "coverage" of the family planning programme without contributing to the health status of the women in a setting where the infra-structure for cancer screening and treatment of cancer is very limited.

The Brain Drain

The so-called "brain drain", or the outmigration of trained staff (particularly doctors) is a serious problem for many developing countries. According to a W.H.O. study on this migration the the developing countries provide 56% of all migrating physicians but receive only 11%. The United Kingdom has been one of the main receivers, but the trend seems to be slowing down somewhat, e.g. in 1968/69 this country received 2100 physician

migrants while 880 left the country, while in 1971/72 the corresponding figures were 1730 and 1190. The reasons for this migration are of course complex, but one important factor seems to be the training received abroad, which is designed for the situation in affluent countries and does not prepare them adequately for their work situation at home.

Inappropriateness of Training Programmes

The inappropriateness of existing training programmes for health workers in most developing countries is obvious. They are still designed on models adopted from the industrialised countries, by doctors who were trained there, and they do not take into account the actual needs of the society and the tasks that need to be carried out in relation to those needs, neither the existing constraints that Dr. Menon described so vividly. For instance, nurse-midwives who will be in charge of a population of perhaps 20000 to 30000 are often still taught that each pregnant woman must be seen at least ten times and according to a fixed scheme, rather than being trained to screen the pregnant population for cases at risk and to concentrate on those cases.

Some other factors that contribute to making the training irrelevant are for example:

- the training programmes are not planned in collaboration with the service providers and with public health administrators;
- the training of community level workers is too often geared towards curative medicine, and is usually carried out in hospital settings;
- the medical profession often has too strong an influence on the curriculum planning for community health workers, resulting in an over emphasis of complex knowledge not necessarily related to the tasks;
- training of teachers for health professionals, if existing at all, is still being carried out in affluent countries with a different cultural setting and different problems;
- the teachers are not sufficiently exposed to, and knowledgeable about, the settings and the conditions in which their students will work, particularly the rural areas.

PROPOSED SOLUTIONS

What, then, can be done about the problems?

The national governments of course are the ones that must carry out the changes and the improvements needed, but many countries still require outside assistance with expertise of various kinds, and this is a responsibility and a challenge to all of us, both to W.H.O. and to O.D.M. and to other relevant bodies, such as this College.

New Policies and Legislation

Development of new policies and legislation is important, for instance, regarding the status of women, family welfare legislation, the role of auxiliary personnel in community health.

Development of a country health plan or some other kind of national level planning is an essential step and is now underway in an increasing number of countries. This planning process should put emphasis on the care for mothers and children, as our World Health Assembly stressed, and it should include steps like a situation analysis (based on research), a reallocation of resources and of tasks, using for example the "risk approach" with screening and referral systems, and also the setting of targets and choice of indicators.

Research

Research and research training is another factor that can help improve the relevance of the services. Much of this is health service research which, as Dr. Barns illustrated, has to be carried out in the actual service settings in the country, but we can be involved in terms of, for instance, assistance with research planning and with development of local research capability, particularly training in health service research methodology and in epidemiological thinking. There is also need for much more research to develop technology that is appropriate for use in primary health care programmes. Such technology has to be inexpensive and simple to use but still safe, and even the development of such a simple tool as the bifurcated needle for smallpox vaccination included a number of very scientific issues. W.H.O. is currently promoting a programme for development of such appropriate technology, and

our Maternal and Child Health programme is concerned with, among other things, how obstetrical science can be applied to the development of technologies for perinatal care.

Training

Training has come up over and over again in this meeting as the most important factor for change, but that also implies that the training of health professionals has to be changed. In this paper I have chosen to concentrate on the aspect of how to promote such change by describing a W.H.O. supported programme for training of teachers in Maternal and Child Health care, which I have been involved in to some extent and which includes a number of the issues that have been discussed here. I will describe the programme as it was developed in Sudan, but similar programmes are now about to be implemented also in Papua, New Guinea, and in the Cameroon.

PROVISION OF TRAINING FOR HEALTH PROFESSIONALS THAT IS RELEVANT - In 1976 we discussed with the Ministry of Health in Sudan some of the problems of the country in the training of health professionals in Maternal and Child Health. As a result we have cooperated with the government in planning and implementing a project for developing the national capacity for training in Maternal and Child Health through a programme for teachers and supervisors of four categories of health workers: the community health worker, the rural midwife, the medical assistant and the health visitor. A national steering committee was formed to plan and implement the project. This committee was assisted by W.H.O. staff. Some guiding principles for the programme were formulated:-

- the training programme should be directly relevant to the health needs of the population in Sudan, particularly the rural population;
- the teacher-trainees should develop the expertise to help future health workers acquire competencies needed to carry out relevant tasks and to solve problems encountered.
- the process of developing this expertise should maximise experiential learning and problem-solving methodology by involving the trainees in-
  (a) promotion of the community's assessment of its own health needs,
  (b) provision of health care to this community, and

(c) planning of their own instructional programmes and development of relevant teaching material.

The Committee then made a list of the priority health problems related to mothers and children, based on the data from the country health programme plan, and listed the possible tasks in Maternal and Child Health care (including nutrition, sanitation, administrative tasks, etc.) that would be relevant to the problems defined.

A health centre in a rural village in the Gezira province was selected as the training centre. The staff of the project were all locals; a part-time project director and two full-time trainers who were health visitors with some experience in training of nurse-midwives. This core staff was supplemented as needed by local expertise in subjects like nutrition, child care, health education, etc. The core staff was given a brief training session abroad in educational technology but the main part of their training was given as on-the-job training by the consultant provided by W.H.O. for the planning and implementation of the first course.

A three-month course is given with 10-12 trainees each time. Before the start of a course three villages in the surrounding area are selected and the village leaders and health workers in these villages are briefed about the programme in a one-day workshop and asked to collaborate with the trainees in their field activities.

The trainees first spend a week in the centre, preparing themselves for working with the community. They then go out for two weeks in small groups into the selected villages, carry out simple surveys on infant morbidity and mortality, fertility patterns, etc. Groups of volunteers to help them with the surveys are selected, trained and supervised.

The data are analysed back in the centre and fed back to the villagers through meetings with the leaders. The trainees then select the tasks that are most important in order to cope with those problems, e.g. immunization, oral rehydration, and prepare themselves to teach these tasks to the volunteers and the village midwives or community health workers. They also produce their own educational material to use in the village.

The second field period of around ten days is spent on training the village health workers and the volunteers on those priority tasks that are feasible for them to carry out. This is done during a simultaneous service campaign carried out by visiting teams of doctors from the province hospital, who carry out antenatal care, family planning, child care and help the villagers solve their water or waste problems. The trainees and their volunteers prepare for this service campaign by holding village meetings.

The last two weeks of the course are spent back in the centre, on planning and preparing for changes in the teaching approaches in their own programme, on repetition of whatever the trainees thought was insufficiently covered before, and on development of adequate teaching material, including a teaching manual for their own purposes.

A couple of special features of the programme might deserve special mention. The first and most important is perhaps that the teaching process focuses on experiential learning, or learning by doing. In this programme for trainers the experiential learning was repeated at two different levels; (a) learning to perform the task, and (b) learning to teach how to perform the task. These are very different indeed, but equally important for a teacher to master.

The other important feature was the use of a problem-solving approach. This was used throughout the programme, starting with the community survey and also included in the learning material used for the course and adapted to use in their own training programmes. The logical approach to management of clinical problems was, for instance, used in teaching management of obstetrical problems, using steps like identification of the problem, decisions on the aim of the treatment, selection of the best treatment and evaluation of the success of the outcome.

Relevance to the community needs was ensured by direct involvement by different levels of community members throughout the training process, and the experiences confirmed the impressions that community members are very aware of the problems and can express their needs very clearly once they are given information that is directly relevant to their own setting. Once these needs are expressed in concrete terms they are also quite motivated in participating to act on them.

The evaluation has shown that there was definitely a profound change of attitude to teaching among the trainees after the course, and in most instances they have also been able to implement a number of drastic changes in their own schools already after the end of the first course, including arrangements on their own with surrounding communities of field training experiences for both midwives and community health workers. A spin-off of the service activities in the villages was also a definite improvement in the continued work of the midwives and the medical assistants and other rural health personnel, an improvement in their record keeping and an inclusion in their work of tasks they had not performed before, like antenatal clinics run by the midwife and regular child care and periodic vaccination campaigns. The village volunteer system has continued to function for at least a year after the first course, particularly in relation to health education and assistance with identification of risk cases in pregnancy and childhood.

The results of the evaluation were fed into a second planning meeting of the national committee after the second course, and the project has since been implemented at a national level taking trainees from the whole country.

CONCLUSIONS

From the discussions in this meeting it is clear that some re-thinking is needed in relation to our assistance to Maternal and Child Health programmes in the developing world, but it is also obvious that this re-thinking has started in many places. Certain factors need to be specially stressed:-

1. A planned programme at the national level for training and for services is essential, and strengthening of the capacity of the trainers for such a programme is needed. Some of the training required for this strengthening can perhaps be carried out abroad, but most of it should take place in the country and in direct relation to the programme activities. Long term, overseas training on an ad hoc basis is not only ineffective but can also be counterproductive in that it contributes to the "brain drain" and it can gear the service development in the countries towards sophistication and away from appropriate technology.

2. International expertise required for assistance at the country level is of a different type from before. The need is not so much any more for the specialist in obstetrics or paediatrics

to help train medical students or to run medical services. A broader background is required, particularly with some experience in working with non-medical professional training and with planning and management of health care at the community level.

The Royal College of Obstetricians and Gynaecologists, due to its still extensive influence on the medical profession of of the countries in the Commonwealth, has great responsibilities in this respect:

- it can influence the minds of College Fellows and Members in British universities and thereby try to make the overseas training more relevant for candidates coming from developing countries;
- it could help building up the capacity of national Colleges and of national postgraduate training in obstetrics, and also look into the possibility of including more community orientated training into its own postgraduate schemes;
- it could direct its research-promoting activities towards, for instance, development and testing of appropriate perinatal technology and towards close surveillance of potentially harmful modern obstetrics, such as elective induction of labour.

DISCUSSION

CHAIRMAN: Professor Sir John Dewhurst

Dr. Gebbie: I am very impressed with what Singapore has done because I think that this is the only answer for the developing countries. Does Professor Ratnam believe that what Singapore has done today the rest of the developing world will have to do tomorrow?

Professor Ratnam: Had Singapore chosen to rely purely on educating and motivating the public, it would not have done what it has done so far in another fifty years. This does not just apply to family planning. One has to look at all the developments that have taken place. Take the throwing of litter. It is amazing how the legislation has become part of one's system after a while. I carry a cigarette butt even in London's dirty streets because I do not want to throw it in the street. It has become part of my system.

Legislation is fine, but it must be implemented. The Third World has to use its own mind and to know what is good for it.

Sir John Dewhurst: Professor Ratnam could try to give up smoking!

Dr. Dunn: Everybody would agree that benign dictatorship or authoritarian guidance is ideal, but nothing is worse than if the authority is misguided, and who is to make those decisions? If we consider many of the medical decisions that have been made in the past and that have been criticised during the course of our deliberations, are we to impose those decisions? I am full of admiration for what has been done in Singapore. If the directives are right then many of us will have to accept more authoritarian dictates in the future. But they will have to be right.

Professor Ratnam: In fairness to the system in Singapore, everything is periodically and regularly evaluated. There are times when the Government has withdrawn legislation and admitted that it has made a mistake.

Dr. Naeye: I am full of awe at what has been accomplished. I think that everybody is. But primarily they have been able to implement change because the Government offered services and was able to manipulate these services to get changes in behaviour. In the great bulk of the Third World the Governments do not offer that many services to most communities.

I am wondering how much of this model can really be applied elsewhere. In Ethiopia most of the people would hardly know who was in power in Addis Ababa or what policies were in force.

Professor Ratnam: I did qualify my remarks by saying that no single model can be transferred intact somewhere else. But a lot of it can be achieved if it is properly supervised and implemented. We know of programmes that misfired because they were implemented in a similar manner in a very different context without adequate infra-structure and supervision. It is a matter of timing. What Singapore has achieved in six or seven years may take some countries twenty years, but if it is left until the public recognises and realises the situation then it will take much longer.

Professor Hendrickse: I believe that one of the factors behind their success in Singapore is the fact that there is a situation in which the population can see that the resources of land, etc., are limited, and that their collective survival depends on certain policies. During the 1939-1945 period the United Kingdom accepted restrictions on individual liberty for national survival. One of the misconceptions still being perpetrated in the Third World is that resources are limitless and time is available. I feel that wartime thinking, limited resource thinking, has got to be put into the minds of the people before they will accept the kind of legislation which has been so successful in Singapore.

Mr. Lawson: The three speakers have said some of the most important things to have come out of the meeting. The title of the Session is incorrect. It should be 'Relevant National Policies". This is the trend that has gone through the three Papers. What has been said about Singapore comes into perspective when we accept that their programme was relevant to Singapore where there is a cooperative population which understands the advantages of what has been proposed.

Dr. Scotney emphasized why we have failed so badly in making services relevant, and therefore they have not been utilized and they have not been effective. Dr. Edström has indicated how this can be done at grass roots level without the assistance of high-powered technology from overseas. Relevance is very important.

HOW CAN BRITAIN HELP?

Dr. A.M. Baker

Many here will have had personal experience of at least some of the answers to this question; I shall merely try to bring together the various mechanisms of technical cooperation as we see them in the Overseas Development Administration (ODA). There are of course many non-governmental organisations which contribute help for the problems that have been considered at this Study Group.

It might be useful to start off in a negative vein by asserting that the United Kingdom does not under any circumstances decide what to do and how to help in any developing country. We are entirely reliant on requests from governments for any type of programme to be initiated. And these requests cannot come from individuals, however highly placed; they cannot even come from Ministers of Health. This function is guarded in all countries by the Ministry of Economic Planning or its equivalent deputed to sift requests from all Ministries and to put forward only those deemed to have sufficient national priority.

Of course that does not mean to say that ODA agrees to all requests in the exact form or to the same degree as they are submitted. All donor agencies have their own policies; that of ODA has remained unchanged since 1975 when the White Paper "More aid for the Poorest" was issued. Today this policy is virtually the same as that of the World Health Organization (WHO) and, indeed of most other donors. However, one must not be complacent about the rectitude of ones priorities; it is very easy, as some have gleefully pointed out, to say one thing in an impressive policy statement and yet to act differently in practice.

Ideally there are preliminary discussions at an informal level between the two parties of a proposed technical cooperation agreement - at which the outline of an acceptable project is prepared; this would have high priority in the health development plan of the developing country and on the other hand would conform to the policies and priorities of the donor agency.

You may be assured that the problems that have been discussed at this Study Group have high priority in our Health Sector Aid

Strategy. But it might be helpful if I spelt out the characteristics of the type of project in this field that would be likely to command support from ODA (assuming a time of no particular financial constraint).

1. It should be directed to the benefit of the rural (or periurban) poor and should be concerned with the delivery by simple methods of preventive and curative care.
2. The project may often be linked and integrated with general development, particularly in the agricultural sector, in the area. It is well realised that improvement in health indices may accompany improved economic status - with its consequent improved supplies of nutritous food and safe water.
3. There should be a powerful staff training component - so much so that the project would be wholly run by recipient country nationals within a few years.
4. The population of the target area should be significantly and constructively involved in the process of health care and delivery and health maintenance.

There is nothing new in these criteria and I do not belive they are contentious; they lay the emphasis on primary health care and that is where the emphasis must surely be.

However, we do not believe that primary care can be operated in a vacuum; it must exist in a balanced structure with secondary and tertiary care. Hence we cannot and do not exclude projects based on district or referral hospitals - although these do not have first priority.

The title "How can Britain Help?" implies that a list will be given of the categories of contribution that this country can offer towards the solution of the problems that have been discussed in this Study Group. Here is an attempt at such a list which is not given in any order of importance. As already mentioned I am only dealing with government to government programmes.

1) Capital Aid - This includes grants or loans for buildings, equipment and transport. In the present context this would most often mean rural health centres where the functional emphasis is on maternal and child care; provision would also be made for associated equipment and transport. Some years ago the

accent was on the provision of central hospitals; while there has been much criticism of this practice it is hard to imagine any modern state without at least one tertiary care facility.

If the request is for a contribution to the country's programme of rural health centre development, it is clearly important that there should be an adequate commitment to recurrent finance and also that sufficient trained staff will be available to operate the centre once built. We are also anxious that equipment and transport should not be supplied without the assurance of, or provision of, adequate skills and spares for the maintenance and repair of what come to be vital components of the health care system.

Increasingly we shall receive requests for manufacturing equipment for the production of some at least of the products needed in the health service.

2) Technical Cooperation - In some developing countries the United Kingdom helped post-independence governments to retain the services of expatriate professionals by supplementing salaries and providing other inducements such as education allowances. This scheme was meant to be purely temporary - to tide a country over until sufficient nationals were trained and experienced to take over. In many countries the scheme has faded out altogether and overall it is diminishing steadily. There are still calls, however, for expert help in the development of local skills and services and the United Kingdom increasingly responds to these by the provision of "Technical Cooperation Officers" (TCOs). Unlike in the original scheme (known as Overseas Service Aid Scheme) TCOs are fully funded from the United Kingdom, have a specific development task to undertake and expect to take some part in the training of those who will succeed them.

Under this heading support is also given for the appointment of certain staff at the schools of tropical medicine and other university departments in a country. These lecturers are available for assignments overseas and of course take part in teaching of students from overseas.

Support can also be given, and happily so, to study groups and seminars such as this.

3) Programme Aid - As multisectoral development programmes are prepared by countries, often with the help of international

agencies such as the World Bank, United Nations Development Programme and WHO, it becomes necessary for funds to be applied to broad programmes rather than individual projects. Such programmes may attract the support of both multilateral and bilateral donors - and the future may well see an increase in the scope of "multi-bi" funding. There is, of course, increasing awareness of the necessity of integrated approaches to the great development problems of the day and the programme of this Study Group demonstrates this clearly.

4) Technical Cooperation Training Programmes - It may be that few engaged in this Study Group have not at one time participated as trainers or trainees in an ODA funded training programme. Courses and attachments may be set in this country and funded by the Technical Cooperation Fellowships Scheme or, of course, by an international agency, a non-governmental organisation or privately. It is probably not necessary in a group such as this to describe the various options which are available. Suffice it to say that the British Council (both in the United Kingdom and in countries overseas) and the International Division of the Department of Health and Social Security are responsible for placement and the monitoring of Study Fellows when courses are taken in the United Kingdom. The British Council is also responsible for a Book Scheme which provides reference works for educational establishments overseas - including medical, nursing and paramedical schools.

There are advantages in a student taking the opportunity for training in a country such as the United Kingdom. Equally there may be advantages in a course of study being undertaken in a developing country, with students possibly drawn as well from other countries on a regional basis. In both instances I believe that the United Kingdom still has a notable role to play; certainly nothing but good can come from the transnational professional contacts so made. An especially valuable aspect of training is that directed at those who will teach their discipline in their own country. Nowhere is the "multiplier effect" more clearly seen than in these programmes.

5) Research - Much is rightly made these days of the disparity between the burden of major health hazards afflicting the Third World and the proportionate weight of research effort put to these very problems. The ODA joins with the Medical Research Council in sponsoring both basic and applied research in developing countries and in appropriate centres in the United

Kingdom. Increasingly this research effort is channelled through international agencies: the WHO Special Programmes on Reproduction and Tropical Disease Research, the International Centre for Diarrhoeal Diseases, the United Nations for Population Activities and others. For nationals of Commonwealth countries the ODA sponors studentships, fellowships and senior fellowships for training and consultation in research techniques that will be relevant to the major health problems of developing countries.

In speaking of research I must of course mention the Inter-University Council for Higher Education Overseas. Many of you here will have personal knowledge of how that body has been able to foster collaborative links between University departments in this country and abroad through short-term visits, recruitment of contract staff and the provision of external examiners. The steady growth in developing countries of medical school departments offering full graduate training programmes is a cause for much encouragement.

Non-governmental organisations from Britain have contributed substantially over the years, particularly in developing training programmes for national staff. The ODA in common with other donor agencies believe these still have an important role to play especially in the rural areas of developing countries. Many community-based Maternal and Child Health/Family Planning programmes have originated with these agencies and ODA provides matching grants to the United Kingdom based charities who engage in these and other development projects.

Conclusion

There is much discussion - some of it has taken place during this Study Group - on how to achieve the WHO's agreed goal of "Health for all by 2000AD". Most of us here know at least part of the way ahead which we all must take. Many, however, are uneasy that recommended policies and techniques may not have been subjected to testing and evaluation that is sufficiently rigorous. With this in mind the ODA has agreed to fund a new group at the London School of Hygiene and Tropical Medicine, the Evaluation and Planning Centre for Health Care which will direct itself to the most effective techniques of primary health care delivery under different environmental conditions.

We believe that Britain can help developing countries as they seek collaboration in solving the great problems with which they are faced; perhaps those that have been discussed here are among the most important of these.

THE ROLE OF THE ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

Mr. E.A.J. Alment

I want to give the background to the College's present position, and the views that it is receiving about what it ought to be doing and is not doing, or what it is doing incorrectly. I shall make it very brief to give participants an opportunity to pick up particular aspects, and it may be helpful to divide the role of the College into two. First, the tasks that it sees that it, and perhaps only it, can do and second, the resources that it undertands it has to meet those tasks. The principle tasks that are recognised and accepted by the College in a traditional sense are, firstly, its role of training within the United Kingdom and the aid it gives by acceptance and recognition of standards of training overseas. Starting with the issue of training within the United Kingdom relevant to the topic of this Study Group, how far are we able to distinguish posts for overseas graduates? Indeed, what are the differences in personal goals of overseas graduates as, for example, between the West African who comes to take something back to his community and the doctor who comes as a means of migration to better social conditions abroad? In the United Kingdom we are not at the moment able to make the necessary clear distinctions between the goals of various doctors who come for their training. Next, how far is training in the United Kingdom matched to their particular needs? Considering the great majority who may be trained in units by doctors with no personal knowledge of the particular conditions in which these trainees will exercise the training they have received, it seems likely that this will not be achieved except by particular associations between units in the United Kingdom and units abroad. So what are those needs? I see a consequence of this Study Group and those that follow of informing those specialists in the United Kingdom who are engaged in any part of the training programme of doctors from abroad what the requirements are that they need to match, as distinct from the requirements of an individual who is to follow a career within the relatively advantageous conditions in the United Kingdom.

It is important to point out that appointments for training posts in the United Kingdom are not made by the College. They are

made by an appointment system in the National Health Service which is agreed by a large body of doctors who are not principally interested in looking outwards from the United Kingdom. It is true that the College can place people in certain appointments, but these are very limited. Yet at the same time in our specialty we know that nearly 60 percent of those undertaking junior posts are overseas graduates, and we also know that the peculiarity of obstetric practice in the United Kingdom is that it is largely not specialist care delivered directly to women by specialists, but a service which depends very greatly on the trainee infrastructure. If it was possible to make one fundamental change in the health services of the United Kingdom which would alter this situation it would be to bring them in line with other countries that deliver specialist care to people by specialists, and add on training as a welcome additional function that can be done for the purpose of training, and not for the purpose of providing services. This is absolutely fundamental and what stands in the way are factors of history, factors of economics, and factors of politics. Unless the College can alter this particular ratio and situation in our specialty, there is a serious obstacle to delivering proper training programmes to doctors from overseas.

Supernumerary appointments do have a place, and we do act to some extent as a clearing house, but in our dialogue with the Department of Health on the extension, for example, of the National Health Service Fellowships matched to particular requirements, the Department of Health and Social Security - as can be seen from the proportion of its resources that it is willing to put into training as opposed to other concerns - does not give a high priority to funding National Health Service Fellowships at the level that is needed in this specialty as distinct, perhaps, from some other. I think the Department of Health and Social Security is perhaps giving a lead in telling us that the National Health Service Fellowships ought to be allocated to doctors who have already completed the major part of their specialist training programme abroad, and what they can be offered is much more of a single small module by which they can appreciate the application of what they have learned in our country compared with their own. We have some knowledge of the individual links between units in the United Kingdom and departments abroad. Most people say that these are more valuable than the College acting as a midwife of training arrangements, because it does mean that individual consultants in the United Kingdom do acquire, through the trainees who

come to them regularly from particular countries, some knowledge of the traditions and health care systems to which they will be returning. It would be even better if they were able to have some experience of those conditions at first hand.

When we consider the history of the College's interest in training overseas graduates, it had its origins in a concept of equality in clinical practice and it now has to advance to a concept of equivalence in professional standards. How far the nature and experience of training posts abroad should be expected to match those in the United Kingdom must also be relative to the common requirements for the College's Diploma. It is vital that the College should select, for the purpose of overseas visits to look at a post from the standpoint of its training potential, people who understand the nature of that post and its work in the context of that country or society. It is also important to consider - and we are asking ourselves this question very closely - how far does the recognition of posts related to our own training arrangements abroad commit the College to the provision of training in the United Kingdom and to the facilities for taking its Diploma? If I could give an example: if we allow a reciprocal arrangement over, say, a Part 1 MRCOG, it allows a national the option to take a Part 1 in one country or another, but continue in a particular training programme for either country. If no such reciprocal arrangement exists, then in effect we are saying that the only doorway into this particular programme, this particular diploma, is through our own examination.

The Part 1 started as an attempt to get all the colleges to define a common standard in basic sciences through which all might enter specialist training. While that has been achieved in some places elsewhere in the world, it was never achieved here, and in that sense the original aims of the Part 1 have been achieved in places abroad where it is now serving that function, whereas in the United Kingdom it remains a Part 1 for our own purposes only and to that extent it has some limitations. As far as the Part 2 MRCOG is concerned, we are looking very closely at what the MRCOG Membership is doing for our own purposes and for other people's purposes in other countries. Is the Part 2 examination a satisfactory way of testing the kind of clinical experience we want and the range of differences within that clinical experience? Does it distinguish degrees of technological development in the experience of candidates? Does it separate out some doctors and put them at a disadvantage solely because of their cultural, social and linguistic differences? Looking at

the pass rates of our examination one must conclude that there is a major problem here. The options that seem to be open are to maintain but adapt a single examination, or to diversify the examination within a common envelope of what it is supposed to identify as between different ways of reaching specialist status, so that in effect we would have several MRCOGs. Or perhaps a third, and more fundamental change: to diminish the significance of an examination as a doorway against other alternative forms of assessment; we are already contemplating adding to, and perhaps displacing, the book of case records and commentaries with a log that records the trainee's actual experience, because the log is the method of assessing the quality of training opportunity whereas the book is simply the showpiece of the best of the experience that can be presented.

The other aspect of our task is what kind of a dialogue we retain between the different parts of the College. We have our Regional Councils, and in the context of the Study Group it can be asked what part they play. One might say that our Regional Councils as an educational concept do not play a particularly significant part in organising trainee exchanges because they represent the traditional structure and ethos of the College itself as it originally appeared to match the needs of a few other countries. Perhaps the dissolution of the Australian Council in favour of a College begun by that body itself should be seen as a very important pointer to the future of other bodies to which this College delegates functions. The College's Committees however are a different case. The Reference Committees in different parts of the world are of great importance when they are able to fulfil their potential, although in some instances they do cause us anxiety as to how far they are representative and able to serve the particular interests in that country with which the College should be concerned. Individuals and officers of the College make contacts by travelling and it is important that the lessons they learn should be incorporated into a much wider view of what the College should be doing in the future. It is significant, following the Study Group, that we should be having a Conference of the Chairmen of Reference Committees, Presidents of Councils and others to consider the structure of the College and how it can be adapted to meet the changes and developments in a way that we should like to see. It has been suggested that the College might separate its functions; that it should have its United Kingdom function and its overseas functions, and that those concerned with its overseas functions should be confined to those with personal knowledge. It is an

interesting concept, and one which will certainly be discussed at the Overseas Conference in greater detail.

One brief word on resources - I think that is crucial. The assumptions that are made about what ought to be done or can be done by the College do rest sometimes on some fairly uncritical consideration of our resources. Many of our Fellows and Members overseas, who constitute two-thirds of our membership, make the point that they pay a subscription and wonder what they get for their money. I do not see that as an attempt to enter commercial arrangements. I see it as a cri de coeur. It is a statement of "We as a College still belong. We acknowledge that we belong because we pay money every year. How much do you understand what it is that we are trying to do?". Looking at the simple facts, of the total subscriptions to the College from the individual Members, roughly one half come from overseas. Although the individual amounts are smaller, the numbers are greater, and although it is true that subscription income is only a small fraction of the income of the College, the investment of overseas Fellows and Members in money not returned to them represents something like 12 percent of the total income of the College. They have a case, and it is quite reasonable for them to say, "What do we get?". Clearly the College should be doing what it can to encourage meetings of this kind, and to encourage travel. I would see the travel costs and residence costs of people as the principle obligations of the College where it has the money to provide them, and it is welcome news that the major investment the College is to make in this, its fiftieth year, is in plans for a twenty-five room hostel next door where we can accommodate people, groups like this one, within the fabric of the College at our own cost. We then simply have to find funds for travel, and the purpose of this is to make it possible to come to this expensive city without having to face its high costs.

Finally, how many of our Fellows and Members in the United Kingdom are really concerned with developing countries? Such people identify themselves, and there are Members here who have decided to spend some time to work abroad, so what is the nature of what we might call latter-day Schweitzerism? We know there are a lot of Scots in the business of travel and working abroad - maybe their national conditions are so unendurable that it is preferable abroad - perhaps it is something we ought to explore. We have at present a fairly primitive record system in the College, but very shortly we shall have a

sufficiently sophisticated system of recording Fellows and Members, where they are and what they do, that I hope we shall be able to distinguish who is where and for what purpose. In that way we could put our fingers on any individual who has some particular expertise to make a framework for setting up future groups of this kind, because this Group was set up very largely with the personal knowledge and contacts of one man. One thing that is said by all graduates of the United Kingdom who decide to travel abroad is their feeling of insecurity in relation to their careers. If we acknowledge that it is desirable when people travel abroad they should be secure and trained to the degree that they have something important to offer, and that the period they spend abroad should be realistic because they will have to become familiar with local conditions before they can be really effective, then they do deserve in the context of the College, and in the context of the country, to be also secure in continuing their careers here at home. I see this as an area in which the College can play a part: in ensuring that nobody loses their place in their own personal career by virtue of a decision to go and give aid by working in the developing world.

This is a very brief survey of where the College stood before the Study Group met. Where we shall go after this will depend on the Overseas Conference which follows this Study Group. I cannot stress too strongly the importance of what has been discussed and the usefulness of what will be brought together in the Proceedings for consideration of the College's future. Either we can shut up shop, pull up the drawbridge and be like any other organisation, issue diplomas and raise our hats and say goodbye, or we can continue to turn this great family towards a future of living, equal reality.

DISCUSSION

CHAIRMAN: Professor Sir John Dewhurst

Dr. Gebbie: I think we are under-estimating the importance of people coming to do part of their postgraduate training in obstetrics and gynaecology. I know many young men who look back happily to their year spent in the United Kingdom and have a great deal of affection for the people who have trained them, and for the College. They do not just come to learn how to monitor fetuses in labour. They come for many different reasons and they take back some very important things. Chief of these is that when many of them come they are very inarticulate in English. They go back fully articulate in English and able to teach midwives and medical students in the country to which they belong. This is one of the most important gains from their training in the United Kingdom.

Secondly, many of them come from small countries and they are divorced from their peers. They know nobody who is training at the same time as they are, and it is very important for trainees to train amongst contempories and colleagues of their own age.

Thirdly, many of them have no knowledge of the personal effort that is required for learning. Many of them think that all that is required is to be taught, and we are in a terrible situation in many countries in which they go to courses, things flash up on a screen, buttons are pressed, and that is knowledge. When they come to the United Kingdom they learn how to learn, which is extremely important.

It is these things, rather than the technology which is of very little use to them, that are the importance of the College and of training in the United Kingdom.

Mr. Alment: Perhaps the one advantage that the overseas graduate has in the United Kingdom is the opportunity to see a form of leisured medical practice. That is one gain we have - that the period of contact with people is the greater. I believe the social impact is important. Professor Beard and I examine in the University of Cambridge and we introduced a system of clinical examination which puts the candidate with the patient, lets him or her get on with it, and we observe what happens.

The impact in the United Kingdom of the overseas graduate in the professional role of the doctor with the United Kingdom Anglo-Saxon citizen is something of the utmost importance. It is very interesting in clinical practice to observe how much an African doctor learns from a Midlands woman when they are left together in the context of a simple industrial society. In a sense it is an ambassadorial role which has enormous impact and enormous benefit to this society.

Sir John Dewhurst: I would agree with a great deal of what Dr. Gebbie said. One problem is that the demand for training of overseas graduates is smaller, so that in a way it is essential that they have some of their training in their own country. But it is equally important that they come to the United Kingdom for some of that training, too.

Professor Beard: Could I look at it from the other side, which is, how do the leaders from the developing countries see Britain? Are the training opportunities that are here really needed, or is this perhaps a diminishing need?

Professor Harrison: A good deal depends on what the recipient country already has. If within that country there are no facilities at all for postgraduate training then it has to make a beginning somewhere, and this is one of the places where the overseas aid will be comprehended; in other words, where the aid is directed specifically at helping to establish a system of post-graduate training that is non-existent. By contrast, in those countries where there is already a core of people who are able to initiate their own system of training, then their requirements or their needs from the donor countries and the donor institutions such as the College will differ.

One of the things that the College has done for my own country is to help us to work out our own system of postgraduate training. The process has involved a certain amount of reciprocity in that some part of our training has been recognised as suitable towards Membership, and a part of the College's training (a part of the Membership requirements), is also recognised in my own country. This sort of cooperation is very valuable.

May I end by asking a question of the President. Looking at it from the other point of view, what impact has the overseas doctor or the African postgraduate student made in the eyes of the ordinary people of the United Kingdom? What benefits, if

any, has the United Kingdom derived from its large number of overseas students who have come to the United Kingdom for some part of their training?

Mr. Alment: I think it is immense, provided it is set in the right context in the training arrangement. I shall now speak personally and from a long experience of African graduates in my own unit. The compassionate quality of the doctor who is not dependent upon being articulate more nearly matches the needs of women who themselves are being articulate in this country and are rejecting aspects of technology than the relationship that exists between the United Kingdom graduate and the United Kingdom citizen. It is an important contribution in spelling out what is the real relationship between the doctor and the patient - provided the graduate has those particular gifts of non-verbal language which are a part of the very great gifts of doctors from the African continent.

Dr. Menon: Since the question of examinations has come up I too have a contribution.

In 1968 I had the privilege of examining here. That year there were a large number of overseas students for the Part 2 examination and there were a large number of failures. One of my friends asked me why so many failures? Was it because the standard of teaching was falling? I knew what was happening so I had to tell him, and I think that what I said then is true even today.

There are three types of candidate who come from India to the United Kingdom for the MRCOG. The first type of candidate is the good student who is selected for our own postgraduate studies in India and who then shows up in the United Kingdom. The second category are those who apply for an employment voucher, wait, and when they get it, come in. They are posted to wherever there are spaces and they take the MRCOG. The third category has plenty of money and knows how to get around foreign exchange regulations. Such students treat the examination as a party.

Quite a number of those who come to the United Kingdom to study have told me personally that they have been given postings to institutions where, one has to admit, the teaching was quite inadequate. When I brought this up in respect of one postgraduate student I was told to raise it in writing, but I felt that that

would not be fair, and in any event, my writing about one particular candidate would not solve the problem. What I suggested was that the College should make it a policy that the students should come to the United Kingdom and take up these postings but that for at least three or four months they should join one of the good teaching hospitals in London so that they do get good teaching. This lack of adequate teaching was the reason why a large number of students were failing. I am also concerned about the relationship between candidate and examiner. There have been suggestions that the viva examination is too long and that it should be cut to thirty minutes. I think that thirty minutes is too brief and I favour forty-five minutes. It takes most candidates ten minutes to establish a rapport with the examiner, and the longer period also gives the examiner time to learn something from the good candidate. I have always felt that an examination from which no one learns anything is a waste of time.

Dr. Evans: This is an unusual occasion in that we have the Ministry of Overseas Development - which is normally a source of funds - and the senior members of the College in one room at the same time. I should like to put forward the suggestion, which is not entirely my own, that we might consider following the lead given by the paediatricians and establish a tropical obstetric unit within the United Kingdom which could possibly be attached to one of the existing paediatric units specialising in tropical paediatric care, or to one of the university medical schools. Such a unit would have the following terms of reference:-

- produce a quarterly journal of community obstetrics;
- endeavour to organise a training programme in community obstetrics in an overseas situation to fit in with courses currently being run that offer an MSc in Maternal Child Health;
- allow its staff, who, we hope, would be funded by the Overseas Development Administration to be available to travel to developing countries on request from their Governments or from medical schools in those countries to assist with their training programmes, to advise in research matters and to define health policies as appropriate to obstetrics;
- coordinate the training fellowships that are already funded by the Overseas Development Administration within the United Kingdom, and in that way it would collaborate with the members of the College and with the postgraduate training section of the College in suitable courses and suitable places.

Sir John Dewhurst: I am quite sure that those to whom the suggestion has been directed will be happy to consider it more fully. I should have thought it was probably inappropriate to have a deep discussion on it now, but it is a very good idea and I am quite certain that they will talk about it at some length.

Dr. El Hakim: I should like to comment on the link between units in England and those in the Sudan.

Our unit was set up in 1954 by a member of the College who linked our unit with the West Middlesex Hospital - a link which we now regard as a traditional one. We were sent to the United Kingdom for a part of our training, not having the membership of the College but having taken an equivalent diploma in the Sudan under the supervision of members of the College. This unit has functioned for twenty-five years and tradition has played a major role in maintaining the link between the colleges in the Sudan and the colleges in the United Kingdom. Graduates who get their diploma in the Sudan are kept in touch through the Proceedings of College Study Groups and Scientific Meetings, and the British Journal of Obstetrics and Gynaecology and everything coming from the College.

Sir John Dewhurst: A number of very important associations of this kind have been formed by different United Kingdom hospitals.

Dr. Dissanayake: We must concern ourselves with meeting the demands of the country even more than the demands of the particular students who come from the developing areas. When students come from those countries could they not be examined to see whether they have the necessary special knowledge and skills that they will need when they go home and work. The College has developed sufficiently and is strong enough to have a few branches. It could have a section for the people coming from the developing areas to test for the skills that they will require when they go back. They could be trained at centres within the developed areas, and people from the United Kingdom could be involved in the training of those students and of the candidates who come to the United Kingdom for their MRCOG.

Sir John Dewhurst: The President has been listening most carefully. He has already referred to a very important meeting to be held in the College later this week. Chairmen of Reference Committees and Chairmen of Regional Councils, and a number

of other people from abroad, will be discussing the overseas role of the College in great detail. As a result of what happens there, and what has happened at the Study Group over the past few days, the College will have a great deal to think about.

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